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Proposed High-Altitude Emission Standards for 1982 and 1983 Model Year Light-Duty Motor Vehicles

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 86

[FRL-1378-5; Docket No. A-79-14]

Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines; Proposed High-Altitude Emission Standards for 1982 and 1983 Model Year Light-Duty Motor Vehicles

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of proposed rulemaking.

SUMMARY: The EPA is proposing to establish new exhaust and evaporative emission standards which are mandatory for 1982 and 1983 model year light-duty vehicles (LDVs) and light-duty trucks (LDTs) when sold for principal use at altitudes above 4,000 feet (1,219 meters). The Agency expects to promulgate, in the near future, a voluntary program for compliance with these standards by 1981 model year LDVs and LDTs. These vehicles shall be capable of complying with the applicable high altitude standards if tested at 5,400 feet (1,650 meters). Beginning in the 1982 model year, all vehicles manufactured for sale in the United States shall comply with these high-altitude standards or be capable of being modified to do so. All vehicles sold for principal use at high altitude must be in the configuration that provides for compliance with the high-altitude standards. Exemptions are to be allowed for low-power, high-fuel economy vehicles designed for use at low altitude and incapable of safe operation at high altitudes. The vehicle certification procedure proposed in this regulation requires manufacturers to assure compliance at 1,650 meters (5,400 feet).

DATES: EPA will hold two days of public hearings in Denver, Colorado, beginning at 9:30 a.m. (30 days or more after this Notice of Proposed Rulemaking is published in the **Federal Register**). Additional information on the hearing is contained in the Supplementary Information section of this NPRM.

EPA will consider comments received on or before 30 days from the date of the public hearing.

ADDRESSES: Interested persons may participate in this rulemaking by submitting written comments to: U.S. Environmental Protection Agency, Central Docket Section (A-130), ATTN: A-79-14, Waterside Mall, Room 2903B (EPA Library), 401 M Street SW., Washington, D.C. 20460.

Copies of material relevant to this rulemaking action are contained in Public Docket No. A-79-14 at the U.S. Environmental Protection Agency, Central Docket Section, Waterside Mall, Room 2903B (EPA Library), 401 M Street SW., Washington, D.C. 20460. The docket may be inspected between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday. A reasonable fee may be charged for copying services.

The exact location of the public hearing will be announced in a future issue of the **Federal Register.**

FOR FURTHER INFORMATION CONTACT: Richard Wilcox, Emission Control Technology Division, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, MI 48105, 313-668-4390.

SUPPLEMENTARY INFORMATION: EPA has found that motor vehicles which demonstrate compliance with emission standards at low altitude produce as much as 50 percent more exhaust hydrocarbons (HC) and nearly 100 percent more carbon monoxide (CO) when tested at 5,000 feet above sea level. The Agency has also learned that, in most high-altitude urban areas, motor vehicles account for more than half of the total HC emissions and almost all of the CO emissions. These emission levels combine with summer sunlight and stable winter atmospheric conditions to cause numerous violations of the ambient air quality standards for oxidant and CO in high-altitude metropolitan areas.

During model year 1977, EPA regulations required that new light-duty motor vehicles intended for sale at high-altitude demonstrate compliance with the applicable emission standards at high altitude. One result of this requirement was that some motor vehicle manufacturers either chose not to or failed to certify for sale at high altitude, all of the models in their product lines. The limitation in the number of models available for sale in these areas generated an adverse reaction among the affected vehicle purchasers and automobile dealerships. With passage of the Clean Air Amendments of 1977, the Congress, in section 213 of those amendments (section 202(f) of the Clean Air Act, as amended), revoked the EPA high-altitude motor vehicle certification regulations, prohibited the establishment of any other regulations governing the sale or distribution of motor vehicles at high altitude before 1981, and required that, beginning with the 1984 model year, all new light-duty vehicles (LDVs) comply with the applicable emission standards regardless of the altitude at which they are sold.

For the interim period between model years 1981 and 1983, the Congress has given EPA authority to promulgate regulations affecting the distribution and sale of new motor vehicles at high altitude, including the establishment of high-altitude emission standards. Such standards, however, may not require a percentage reduction in vehicle emissions at high altitude that exceeds the comparable percent reduction provided by section 202(b) of the Act for LDV's (generally for HC and CO these standards could represent a 90 percent reduction from the 1970 high-altitude base-level). In no event, however, may numerically more stringent standards be established for high-altitude areas than are applicable under non-high-altitude conditions. For example, the EPA may not require an oxides of nitrogen (NO_x) standard numerically lower than the 1.0 gram per mile (g/mile) standard that will be in effect at low altitude in model year 1982.

Standards

The Clean Air Act Amendments established the limiting guideline for the value of the high-altitude LDV standards as a 90 percent reduction from uncontrolled vehicles tested at high altitude, but in no case may the numerical value of the standard be less than the low-altitude standard. Since NO_x emissions decrease as uncontrolled vehicles are driven to higher altitudes, a 90 percent NO_x reduction from these vehicles would be lower than the NO_x values determined for low altitude. Because the high-altitude standards may not be numerically less than the low-altitude standards, the present NO_x standards for the applicable model year and class of vehicle shall apply at all altitudes. For the HC and CO standards, a method for determining the 90 percent reduction was required.

EPA believes that Congress, in amending the high-altitude provisions of the Clean Air Act, intended that high-altitude LDV emission standards be determined by simply establishing a 90 percent reduction from a baseline fleet of representative high-altitude vehicles. Ideally, the same vehicle fleet which was used to establish the low-altitude standards should be used to determine the high-altitude baseline. Since this fleet no longer exists as tested, an alternate method was necessary.

Recent testing of a 1970 fleet of 25 light-duty vehicles was performed under the direction of the Motor Vehicle Manufacturers Association (MVMA) at low altitude (St. Louis, 600 feet), and at

high altitude (Denver, 5,400 feet).[1] The results of the MVMA tests yielded average fleet emissions of 2.85 g/mi HC and 20.45 g/mi CO at low altitude, and 4.47 g/mi HC and 64.4 g/mi CO at high altitude. The MVMA low-altitude baseline values compare with 4.1 g/mi HC and 34 g/mi CO which are generally accepted as the low altitude LDV baseline values. Because of the disparity between the two sets of low-altitude baseline values, EPA proposes determining the high-altitude exhaust emission standards by deriving a low-to-high altitude correction factor, which then can be applied to the existing low-altitude standards. Without using this factor, a simple 90 percent reduction from the MVMA baseline data would yield potential high-altitude standards of 0.45 g/mi HC and 6.4 g/mi CO. EPA believes that these standards would be more stringent than Congress envisioned.

In developing the correction factor, EPA assumes that the change in vehicle exhaust emissions is directly proportional to the change in altitude. Therefore, the relationship between light-duty vehicle emissions and altitude can be described by the equation:

$$\text{Emissions at altitude} = \text{Emissions at base altitude} + \left[\left(\frac{\text{Change in emission}}{\text{Change in altitude}}\right) \times \text{Change in altitude}\right]$$

If the emissions at low altitude are assumed to be the low-altitude baseline value, then high-altitude baselines can be established from:

$$\text{Baseline at altitude} = \text{Baseline at low altitude} + \left[\left(\frac{\text{Change in emission}}{\text{Change in altitude}}\right) \times \text{Change in altitude}\right]$$

As previously stated, the generally accepted low-altitude LDV baseline values are 4.1 g/mi HC and 34 g/mi CO. The average emissions for the MVMA fleet are 2.85 g/mi HC and 20.45 g/mi CO at the St. Louis altitude (600 feet), and 4.47 g/mi HC and 64.4 g/mi CO at the Denver altitude. Substituting the appropriate values into the equation yields:

$$\text{HC baseline at altitude} = 4.1 + \left[\left(\frac{4.47-2.85}{5400-600}\right)(5400-600)\right]$$

$$\text{HC high-altitude baseline} = 5.7$$

Taking a 90 percent reduction from this baseline yields a high-altitude HC standard of 0.57 g/mi (at 5400 feet).

Similarly for CO:

$$\text{CO baseline at altitude} = 34 + \left[\left(\frac{64.4-20.4}{5400-600}\right)(5400-600)\right]$$

$$\text{CO high-altitude baseline} = 78$$

Again, taking a 90 percent reduction yields a high-altitude CO standard of 7.8 g/mi.

The proposed high-altitude standards for LDTs are determined in a different manner from the LDV high-altitude standards. EPA is proposing an alternative approach partially because Congress did not mandate, in the Clean Air Act, that the same methodology which is followed for LDVs must also be used to set equally stringent standards for LDTs. In addition, a different approach had to be found because no 1970 LDT baseline fleet tested at both high and low altitudes was available; therefore, the necessary data do not exist. The Agency's alternative methodology fully responds to the Congressional intent of significantly reducing high-altitude motor vehicle emissions.

The high-altitude LDT standards are found by using (1) data from a 1969 LDT baseline fleet which was tested at low-altitude, and (2) the absolute difference in the emissions of a 1970 LDV baseline fleet (MVMA vehicles) when tested at both high and low altitudes. If a proportional relationship is assumed between the standards and baseline emissions at high altitude, and the standards and baseline emissions at low altitude, the high-altitude standards can be determined from the following equation:

$$\text{Standards at altitude} = \left(\text{LDT baseline at low altitude} + \text{Change in LDV emissions}\right) \frac{\text{LDT low altitude standard}}{\text{LDT low altitude baseline}}$$

By deriving the LDT standards in this manner, EPA assumes that the absolute change in LDT and LDV exhaust emissions with altitude is the same. This assumption implies that the change in emissions with altitude is simply a function of enriching the fuel-air mixture of the carburetor, and is not significantly affected by the differences in weight or road load between the two categories of vehicles.

It is possible that this method could underestimate the increase in emissions from LDTs as a function of altitude and, therefore, result in a standard which is somewhat more stringent than the corresponding LDV standard. However, this small potential error is offset by the choice of the 1969 LDT baseline fleet. First, the LDT baseline vehicles were uncontrolled, while the LDV baseline vehicles were partially controlled. This means that the high-altitude LDTs will be less stringently controlled relative to high-altitude LDVs. Second, the LDT baseline vehicles were all heavier than 6,000 pounds gross vehicle weight (GVW), although the LDT class includes vehicles below this weight. Therefore, the baseline emissions upon which the LDT high-altitude standards are based, are relatively lenient compared to that which was used in the LDV regulations. Both of the above factors would make the high-altitude standards somewhat less stringent, thereby offsetting any potential error in the other direction.

The proposed LDT high-altitude standards can be determined with the following information. The 1969 LDT baseline emissions were 8 g/mi HC and 102 g/mi CO.[2] As previously stated, the 1970 LDV baseline values were 2.85 g/mi MC and 20.45 g/mi CO at low altitude, and 4.47 g/mi HC and 64.4 g/mi CO at high altitude. The high-to-low absolute differences are, therefore, 1.6 g/mi HC and 44 g/mi CO. For the 1982 LDT model year, the low-altitude standards will be 1.7 g/mi HC and 18 g/mi CO. Substituting these values into the above equation yields the following high-altitude standards for 1982 LDTs:

$$\text{HC high altitude standard} = (8+1.6)\frac{1.7}{8} = 2.0$$

$$\text{CO high altitude standard} = (102+44)\frac{18}{102} = 26$$

For the 1983 LDT model year, the low-altitude standards have been proposed to be 0.8 g/mi HC and 10 g/mi CO. Therefore, the proposed 1983 LDT high-altitude standards are:

$$\text{HC high altitude standard} = (18+1.6)\frac{0.8}{8} = 1.0$$

$$\text{CO high altitude standard} = (102+44)\frac{10}{102} = 14$$

The Agency derived the required evaporative emission standards for high altitude by using a ratio concept. This ratio was obtained from a theoretical analysis rather than vehicle tests data.[3] The high-to-low ratio for evaporative emissions was determined to be 1.3. The following table summarizes the proposed standards at the reference altitude.

[1] Draft Society of Automotive Engineers paper by J. B. Edwards, et al., dated June 11, 1979 and entitled "1970 Passenger Car High Altitude Emission Baseline."

[2] EPA Report No. SDSB-79-23 by L. D. Ragsdale, dated July 1979 and entitled "1969 Light-Duty Truck Baseline Program and 1983 Emission Standards Development."

[3] Technical Report by M. Leiferman, SDSB, ECTD, OMSAPC dated January 1979.

Proposed Standards at Reference Altitude of 5,400 Feet (Denver Test Site)

	HC[4]	CO[4]	NO_x[4]	Evap.[5]
LDV 1982–1983	0.57	7.8	[6]1.0	2.6
LDT 1982	2.1	26	2.3	2.6
LDT 1983	1.1	14	[7]LAS	2.6

[4] Grams per mile.
[5] Grams per test.
[6] For 1982, vehicles made by American Motors Corporation must meet a standard of 2.0 g/mi NO_x.
[7] LAS—Low-altitude standard (standards to be determined in a separate action).

It should be noted that the LDT standards being proposed by EPA under a separate rulemaking action for the 1983 model year may extend the definition of useful life for LDTs. If EPA adopts those proposed regulations as final, the 1983 high-altitude standards would also apply over the extended useful life.

In an analysis of the leadtime which is currently available to manufacturers, the Agency concluded that high-altitude regulations cannot be fully implemented before the 1981 model year vehicles begin initial certification. This short lead time will make it impossible for some manufacturers to certify every model which they expect to offer for sale in high-altitude areas. However, the severity of atmospheric pollution in these areas justifies control of high-altitude vehicle emissions as early as is feasible. Therefore, recognizing the lead time situation, and at the same time the need to take immediate action to safeguard the public health, EPA will shortly promulgate a voluntary compliance program for the 1981 model year, followed by full implementation of the high-altitude regulations in the 1982 and 1983 model years as proposed here.

Control Strategy

For model year 1977, EPA regulations required manufacturers to certify motor vehicles sold for principal use at high altitude (above 4,000 feet) to conform with the applicable standards under high-altitude test conditions. One result of this requirement was that manufacturers produced separate vehicle configurations for sale at high altitude. Due to the low percentage of sales represented in high-altitude areas (approximately 3.0 percent of nationwide volume), manufacturers chose to produce for sale at high altitude, only a portion of their total product line. As a result, although total sales were not affected, there was a limit to the number of models which were made available by manufacturers to dealers in these areas. Adverse reaction to this situation was one of the reasons Congress revoked the 1977 model year EPA high-altitude regulations.

To avoid this problem with the 1982 and 1983 regulations, EPA is proposing an alternative control strategy. The Agency proposes to require essentially all subject vehicles, regardless of where they are sold, to meet or to be *capable* of being modified at a reasonable cost to meet high-altitude standards. Some vehicles may be capable of meeting the applicable standards at all altitudes, while others may require an adjustment, different calibration, new part, or replacement of parts before being sold at high altitude. Since every new vehicle would be certified for sale at high altitude, there should be no reason for manufacturers not to make their full product line available, and the hardware costs of the controls will be applied only to those vehicles sold for principal use at high altitude.

It is possible, however, that some low-power vehicles would drive satisfactorily and give good fuel economy at low altitude, but would not have sufficient power to perform safely or meet emission requirements at high altitude. These vehicles are not normally sold at high altitude at present. To avoid this potential loss of fuel-efficient vehicles, certain criteria for exemptions are being proposed which will allow low-powered, high fuel economy vehicles to be certified for principal use at low altitude only. Exemptions could occur when:

1. Such vehicles would be designed specifically for low altitude application and would not be offered for sale at high altitudes even in the absence of the requirements of this regulation (due to unacceptable performance, such as safety problems when operated at high altitude);
2. The performance (acceleration) of such vehicles would be worse when tested at high altitude than the vehicles with minimum performance offered by the manufacturers when tested at low altitude; and
3. The manufacturer must provide a warning to the ultimate purchaser that the vehicle has insufficient power for safe operation at high altitude.

EPA invites comments, with supporting evidence, addressing the degree to which manufacturers might actually be required to stop producing those vehicles if specific allowances are not made. Comments are also requested on the appropriateness of the proposed approach or alternative criteria that would allow the continued sale of such vehicles at low altitude.

The definition of "high altitude" used in the 1977 high-altitude regulations has been adopted for this proposed action. Namely, the regulations require that vehicles sold for principal use in designated high-altitude areas comply with the stated emission standards when tested at 1,650 meters (5,400 feet). A designated high-altitude area is any county with a substantial portion of its area located above 1,219 meters (4,000 feet).

Light-Duty Trucks

The Agency has included light-duty trucks in this action because they represent a significant proportion of the light-duty motor vehicle fleet. In the mountain states where these emission controls are needed, new truck registrations represent 35 percent of the total new motor vehicle registrations, and approximately 85 percent of all truck sales are light-duty trucks. With this large a truck population in the high-altitude states and the fact that their emissions are much greater than light-duty vehicles, it is important that this class be included in the 1982 and 1983 regulations if the desired air quality improvements are to be realized.

Technology Requirements

In model year 1982, EPA expects the automobile industry to employ emission control systems which use three-way catalytic converters ("catalysts") with oxygen-sensor controlled feedback fuel systems on 90 percent of the light-duty vehicles. The three-way catalyst is a device which operates in the exhaust stream of the vehicle. It employs noble metals (typically Platinum and Rhodium) to act as catalysts to chemical reactions which aid in lowering the emission levels of all three regulated pollutants (HC, CO, and NOx), thus the term three-way catalyst. The noble metals promote the oxidation of HC and CO to form H_2O (water) and CO_2 (carbon dioxide). At the same time, NOx emissions are reduced (oxygen is taken away) to result in emissions of N_2 (nitrogen) andO_2 (oxygen).

For this emission control system to operate properly, it is necessary to control the air-fuel ratio which enters the combustion chamber to approximately stoichiometric conditions. (That is, the proportion of fuel-to-air is kept as close as possible to the mixture [approximately 1 part of fuel to 15 parts of air] at which, under ideal conditions, complete combustion of the fuel would take place and would yield only carbon dioxide and water as combustion products). Therefore, manufacturers have developed fuel metering systems to maintain the air-fuel ratio near stoichiometric. This has been accomplished by placing a sensor in the engine exhaust which monitors

the air-fuel ratio by measuring oxygen in the exhaust (O_2 sensor signals the fuel system either to add or substract fuel to regain the stoichiometric air-fuel ratio). This is the oxygen sensor controlled feedback fuel system.

The combination of the three-way catalyst and the O_2 sensor feedback fuel system is very effective at lowering emissions. At the same time, this system tends to be effective at compensating for changes in altitude. As altitude increases, less air will enter for each part of fuel than would occur at sea level. The O_2 sensor will note this excursion from a stoichiometric air-fuel ratio, and the fuel system will then be directed to meter less fuel until the stoichiometric ratio is once again attained. Thus, the emissions of the vehicle will be maintained at a low level even as the air density changes with altitude changes. EPA believes that the high-altitude standards will assure that these emission control systems are designed and calibrated for the full range of altitudes where emission reductions are required.

The Agency anticipates that the balance of the model year 1982 fleet (i.e., 10 percent of the light-duty vehicles and all light-duty trucks) will use either oxidation catalysts or no catalyst at all to control emissions.

Oxidation catalysts are located in the exhaust stream, as are the three-way catalysts. However, the catalytic properties of this device do not promote the reduction of NO_x emissions. Instead, this device only aids in the oxidation of HC and CO.

Because this catalyst does not control emission of NO_x, for which precise air-fuel metering is essential, the air-fuel ratio entering the engine does not have to be maintained at stoichiometric. Therefore, manufacturers do not use oxygen-sensor controlled feedback fuel systems on these vehicles, and generally the fuel metering is calibrated for optimum performance at a fixed barometric pressure.

Similarly, those vehicles which do not use catalysts at all generally employ a fixed calibration fuel system. These vehicles rely upon a combination of other devices to assure that emissions of HC, CO, and NO_x are minimized.

Because these non-three-way systems use fixed-point calibrations for their fuel metering systems, the air-fuel ratio becomes richer (more fuel per unit of air) as the altitude increases. This tends to result in higher emissions of HC and CO at higher altitude. Thus, for these vehicles to comply with emission standards at high altitude, the manufacturers will need to add compensating devices which will maintain the air-fuel ration at a constant value as altitude varies.

Economic Impact

EPA believes that compliance with the proposed high-altitude standards under the two-vehicle strategy will not require extensive redevelopment of the emission control devices presently planned by the manufacturers for use in 1982 and 1983.

It is expected that a simple recalibration of the open-loop portion of the three-way systems (i.e., those operating modes such as cold start and power enrichment when the feed-back control is disengaged), to account for high-altitude operation will be sufficient to assure compliance with the standards. Thus, EPA anticipates no additional compliance costs for the three-way systems. Non-three-way systems, however, do not have the inherent capabilities to modulate the air-fuel ratio in response to changing altitude. Therefore, the non-three-way vehicles sold at high altitude must use aneroid (pressure sensing) devices to assure compliance with the standards at high altitude.

Generally, EPA believes that one aneroid will operate an air bleed to the engine which will assure a proper air-fuel ratio; this device will be attached to the intake system and will provide additional air. In addition to the aneroid used to modulate the air-fuel ratio, some vehicles will require additional compensation (e.g., spark advance, transmission shift speeds, deceleration devices, EGR system). EPA has assumed in its analysis that one-half of these vehicles will require an average of two such devices in addition to the fuel control aneroid for a total of three. Thus, for the total fleet of non-three-way equipped vehicles, EPA projects that each vehicle will need an average of two aneroid devices.

EPA estimates that the aneroid devices for non-three-way systems will cost an average of $10 each including development, manufacturing, installation and profit. No additional cost is required for development of the three-way systems since manufacturers are already demonstrating the capability of achieving the proposed high-altitude standards. Sales projections indicate a total national sale of 23 million light-duty vehicles and 6.6 million light-duty trucks during model years 1982 and 1983; approximately 3 percent of these sales will be made at high altitude, and one-third of those sales will be non-three-way equipped vehicles. Based on these projections, EPA estimates the total cost of the devices on non-three-way vehicles will be $8.0 million. Additionally, the Agency projects a maximum certification cost of $2.3 million for the two-year life of the standards, giving a total program cost of $10.3 million. Based on this estimate of the economic impact, EPA does not believe that the proposed standards will have any significant effect on the supply of, or demand for, motor vehicles in the nation, or in high-altitude regions. The Agency also does not expect the capital requirements of the industry to be adversely impacted. The aneroid devices are not significantly different from devices already in existence, and will probably be purchased from independent vendors with existing capacity. Comments are invited on this issue.

As stated earlier, this proposed regulation includes the provision that all vehicles manufactured for sale in the United States shall comply with the high-altitude standards or be capable of being modified to do so. A maximum charge of $40 (1979 dollars) is being established by EPA for modifying a motor vehicle to comply with the applicable standards at high altitudes. This upper limit will ensure that the owner of such a vehicle will not be burdened with excessive costs. The maximum fee will include the costs of parts and labor which may be required to modify new cars before they are sold or to modify in-use vehicles whether the changes are performed at a dealership or an independent repair facility. In the future, as the value of money changes, the maximum allowable charge must also change so that the relative cost of modifying a vehicle remains the same. After reviewing several alternatives, the Agency concluded that the Consumer Price Index for all Urban Consumers (CPI–U) is the most appropriate time-value escalator.

High-altitude modifications can be made either when a motor vehicle is new, or after it has already been in service. Therefore, it is important that the price index reflect these categories. The CPI–U includes suitable indices for both new cars, and automobile maintenance and repairs. Relative to one another, these indices were weighted about 70% and 30%, respectively, in the January 1979 CPI.[9] This proportion is used in the following equation to find the maximum allowable cost (C) in any future year (i).

[9] The consumer price index is published monthly by the Bureau of Labor Statistics, Department of Labor. Weighting factors are published in January of each calendar year.

$$C_i = 40 \frac{(0.3 \times R_i) + (0.7 \times N_i)}{(0.3 \times R_{1979}) + (0.7 \times N_{1979})}$$

Where:

C_i = Maximum allowable cost to the consumer for modifying a vehicle that had its emission-data vehicle fleet selected in the [i]th calendar year;

R_i = automobile maintenance and repair consumer price index for January of the calendar year in which the emission-data vehicles are selected;

N_i = new car consumer price index for Jaunuary of the calendar year in which the emission-data vehicles are selected;

R_{1979} = automotive maintenance and repair consumer price index (CPI–U) for January 1979; and

N_{1979} = new car consumer price index for January 1979.

Comments which address the appropriateness of this cost escalating procedure are invited.

Air Quality Benefits

The severity of the air pollution problems in the larger, high-altitude cities dictates the need for the regulation. According to the Council on Environmental Quality, Denver was second only to Los Angeles in the number of days in 1975 when national ambient air quality standards were violated. Albuquerque was tied for third. Denver, Salt Lake City, and Albuquerque are rapidly growing, automobile-oriented cities. The meteorological conditions for these cities, frequent winter inversions and abundant summer sunshine, in combination with the high altitude and extensive dependence on the automobile, result in air quality problems that belie the size of the cities. (Denver, largest of the three, is only the 24th largest metropolitan area in the nation.) It is important that the emission control systems used on high-altitude vehicles be designed and calibrated to operate as efficiently as possible to reduce the severity of high-altitude air quality problems.

Projected emissions of CO and HC for Denver with and without the proposed standards are shown below for selected years. These are based on vehicle-miles-traveled per day (VMT) of 20.5 million for 1980, 21 million for 1982, and 24 million for 1987, in addition to the fleet emission rates presented in Table IV–11 of the Environmental Impact Statement—Background Document (VMT/Day × Emission Rates = Daily Emissions). The years 1982 and 1987 were chosen because the Clean Air Act requires attainment of the CO and oxidant standards by 1982. An extension of up to 1987 can be allowed if all reasonable control measures will not attain the standards by that date. In calculating emissions with the 1982 and 1983 high-altitude standards, light-duty vehicles and light-duty trucks are affected by the standards, heavy-duty trucks are not. Forty tons per day of stationary source hydrocarbon emissions are included in the hydrocarbon emission totals for all years.

Denver Area Emissions

[Tons per day]

	1980		1982		1987	
	HC	CO	HC	CO	HC	CO
Baseline	236.1	1930.2	195.8	1633.6	135.0	984.9
With Stds	236.1	1930.2	195.3	1625.9	134.2	965.1
Reductions:						
Tons per day.			0.5	7.7	0.8	19.8
Percent			0.3	0.5	0.6	2.0

These estimated reductions are comparable in magnitude with other control strategies, which combined together provide a significant reduction in emissions. The estimates assumed the introduction of nationwide control technology designed to meet low-altitude standards but providing some degree of control when the vehicles are operated at high altitudes. Should other technologies, which do not have high-altitude compensation, be utilized for achieving future low-altitude standards, or should the compensating systems not be developed to their full control capability, the uncontrolled high-altitude emissions would be much higher. This would result in substantially higher air quality benefits for the proposed action.

Cost Effectiveness

The cost effectiveness of the high-altitude standards was determined by dividing the total cost by the expected emissions reduction. The cost per ton of emissions reduced by these proposed standards is $5 for CO and $170 for HC. These figures are substantially lower than comparable figures for other implemented or proposed control strategies which range up to about $150 per ton for CO and $955 per ton for HC.

Vehicle Compliance

The effect of the proposed regulations is to require that all new vehicles meet both high- and low-altitude emission standards for their useful life, or at least be capable of being modified to do so. EPA examined three possible options for requiring demonstration of compliance with the standards. The first and simplest option considered by EPA would require only that manufacturers provide statements of compliance. The second option would require manufacturers to provide supporting data and/or technical evaluations with their statements of compliance. The third option would require a demonstration of compliance at high altitude. The Agency concluded that the most appropriate approach to assuring compliance of vehicles at high altitude is to require testing at 5,400 feet ± 300 feet (1,620 meters ± meters) only. This alternative takes advantage of the availability of existing test facilities in the Denver area. Manufacturers of vehicles requiring adjustments or modifications to meet the high-altitude standards must submit descriptions of the recommended changes to the Administrator for approval as part of the certification process.

The proposed regulation provides the Administrator with two options in selecting emission-data vehicles for testing at high altitude. Vehicles may be chosen from any of the vehicles selected for low-altitude testing, or one additional vehicle per engine system combination for high-altitude testing may be selected if certain configurations are not represented in the low-altitude selections. While the proposed rules provide broad selection criteria, EPA expects that the number of vehicles actually chosen for testing will be small and limited to vehicles which, in the Agency's engineering judgment, are likely to have poor emission performance at high altitude. Comments are invited regarding more specific selection criteria and certification options.

The Agency may also require manufacturers to perform assembly-line testing (Selective Enforcement Audits) at high-altitude locations.

The regulations would provide that one certificate of conformity covers a vehicle regardless of whether it is to be sold for principal use at high or low altitude. The regulations would provide, however, that a vehicle sold to an ultimate purchaser, for principal use at high altitude, would not be covered by a certificate of conformity if not actually equipped and adjusted to meet high-altitude standards. Therefore, such a sale or delivery by a vehicle manufacturer or its agent would constitute a violation of section 203(a)(1) of the Act.

A violation would not occur upon sale of a low-altitude vehicle at a high-altitude location where the manufacturer or its agent has taken reasonable and prudent steps to ascertain that the place of principal use is not a designated high-altitude location, or upon the sale of such a vehicle at a low-altitude location where the manufacturer or his agent has no reason to believe that the vehicle will be

used principally in a designated high-altitude location.

The Agency will not consider it a violation of section 203(a)(1) of the Act for a vehicle manufacturer to sell a high-altitude vehicle for principal use at low-altitude locations. However, the Agency intends to monitor high-altitude vehicles which are operating at low-altitude. Recall investigations will be initiated if there are data to indicate that high-altitude vehicles do not comply with emission standards at low altitude, and recalls will be considered where appropriate. Moreover, any such vehicle which does not meet applicable emission standards at low altitude will render the manufacturer liable under the emission warranties of section 207 of the Act.

Parameter Adjustment

EPA anticipates that some interested parties may be concerned with the effect parameter adjustment regulations could have on the production of high-altitude vehicle configurations. The Agency finds the two sets of regulations are completely compatible, although the existence of parameter adjustment regulations may increase the cost of the high-altitude regulations in some instances.

Manufacturers are expected to produce high- and low-altitude configurations which comply with both sets of regulations in one of three ways:

1. Automatic altitude compensating devices (aneroids) and control systems (three-way catalyst) will reduce emissions without adjustable parameters;

2. In instances where the Administrator has designated a parameter as an "adjustable parameter," the high- and low-altitude standards will be met within the range of adjustability; and

3. In instances where the standards cannot be met within the range of adjustability for a designated parameter, separate high-altitude parts will be be allowed and made available provided the service can be performed at a dealership or an independent repair facility for less than the $40 (1978 dollars) maximum charge.

Comments are invited with regard to implementing high-altitude regulations when parameter adjustment regulations are in effect.

Advance Notice of Proposed Rulemaking.

On May 11, 1979 an Advance Notice of Proposed Rulemaking (ANPRM) was published in the Federal Register (44 CFR 27700) for the purpose of informing the public that the EPA was developing high-altitude emission standards. The ANRPM solicited comments from the public relevant to such actions. During the latter stages of the EPA review process for this NPRM, comments were received from Ford Motor Company and the Recreation Vehicle Industry Association. The comments generally concerned the need for the high-altitude standards, the levels of the standards, their applicability, and lead time. All of the issues had been addressed to some extent in the NPRM development process prior to receiving the comments. The comments will be reviewed again later along with the NPRM comments. To delay publication of the NPRM for a more detailed evaluation would cause substantial delay and significantly compromise the effectiveness of this limited model year regulation.

Public Hearings and Comment Procedures

The first day of public hearings will be devoted exclusively to the provisions of this NPRM, i.e., the interim high-altitude standards for 1982 and 1983 light-duty motor vehicles. The second day of public hearings will be held to gather additional information concerning the high-altitude emission regulations for light-duty motor vehicles manufactured during or after model year 1984 as mandated by Congress in Section 206 of the Clean Air Act, as amended. The hearing on the 1984 high-altitude regulations is not part of a formal rulemaking action; it is intended to increase public partcipation in the initial stages of developing the future standards. Additional information on the hearings will be announced soon in the Federal Register.

During the final rulemaking on the 1982 and 1983 interim high-altitude regulations, EPA will consider comments received on or before 30 days from the date of the public hearing.

We request that, to the extent possible, comments be submitted prior to the hearing. It is EPA's intention to assure all interested parties an opportunity to study all information which may become the basis for EPA's final action in this proceeding. Accordingly, the Agency will not consider in this rulemaking any information which cannot be made publicly available. Parties who wish to submit information in response to this Notice of Proposed Rulemaking are cautioned that EPA will not consider, but will return to the commentor, any comments which are claimed, in whole or in part, to be confidential.

Evaluation Plan

Because of the fixed three-year life span of the regulations proposed in this action, the Agency is not planning to review it subsequent to its ultimate promulgation. However, at the time when regulations pertaining to high-altitude emission standards for 1984 and subsequent model years are promulgated, the Agency will put forward a plan for the review of the efficacy of that rulemaking action, to be completed within five years after its promulgation.

Reporting and Recordkeeping Requirements

Under the EPA's new "sunset" policy for reporting requirements in regulations, the reporting requirements in this regulation will automatically expire five years from the date of promulgation, unless EPA takes affirmative action to extend them. To accomplish this, a provision automatically terminating the reporting requirements at that time will be included in the text of the final regulation.

Regulatory Analysis

The Administrator has determined that this action is a "significant" regulation. The Agency has prepared a document entitled; "Draft Environmental Impact Statement/Background Document: 1982–1983 High-Altitude Emission Standards," which satisfies the requirements for analyses called for by Executive Order 12044, and sections 202(f)(3) and 317 of the amended Clean Air Act. Anyone may review and reproduce this document in the EPA Central Docket Section. Copies are also available upon request from the Office of Mobile Source Air Pollution Control, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460.

1. The table of contents for Subpart A of Part 86 is amended by the addition of the following sections:

Subpart A—General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, 1977 and Later Model Year New Light-Duty Trucks, and for 1977 and Later Model Year New Heavy-Duty Engines

* * * * *

Sec.

86.082–1 General applicability.
86.082–2 Definitions.
86.082–8 Emission standard for 1982 Model Year Light-Duty Vehicles.
86.082–9 Emission standard for 1982 Model Year Light-Duty Trucks.
86.082–21 Application for certification.
86.082–24 Test vehicles and engines.
86.082–26 Mileage and service accumulation; emission measurements.

86.082–28 Compliance with emission standards.
86.082–30 Certification.
86.082–35 Labeling.
86.082–36 Maintenance instructions.
* * * * *

The text of the proposed rule reads as follows:

Subpart A—General Provisions for Emission Regulations for 1977 Later Model Year New Light-Duty Vehicles, 1977 and Later Model Year New Light-Duty Trucks, and for 1977 and Later Model Year New Heavy-Duty Engines

1a. A new § 86.082–1 is added. This section is identical to § 86.078–1 except that paragraph (c) is deleted.

§ 86.082–1 General applicability.

(a) The provisions of this subpart apply to 1982 and later model year new gasoline-fueled and Diesel light-duty vehicles, 1982 and later model year new gasoline-fueled and Diesel light-duty trucks and 1982 and later model year new gasoline-fueled and Diesel heavy-duty engines.

(b) *Optional applicability.* A manufacturer may request to certify any heavy-duty vehicle 10,000 pounds GVWR or less as a light-duty truck: Heavy-duty vehicle provisions do not apply to such a vehicle.

2. Section 86.082–2 is added. This section is identical to § 86.080–2 with the addition of the term "high-altitude reference points."

§ 86.082–2 Definitions.

(a) The definitions in this section apply to this subpart and also to Subparts B, D, H, I, and J.

(b) As used in this subpart all terms not defined herein shall have the meaning given them in the Act:

"Accuracy" means the difference between a measurement and true value.

"Act" means Part A of title II of the Clean Air Act, 42 U.S.C. 1857 f–1 through f–7, as amended by Pub. L. 91–604.

"Administrator" means the Administrator of the Environmental Protection Agency or his authorized representative.

"Auxiliary Emission Control Device (ADCD)" means any element of design which senses temperature, vehicle speed, engine RPM, transmission gear, manifold vacuum, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

"Basic engine" means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator.

"Basic vehicle frontal area" means the area enclosed by the geometric projections of the basic vehicle along the longitudinal axis, which includes tires but excludes mirrors and air deflectors, onto a plane perpendicular to the longitudinal axis of the vehicle.

"Body style" means a level of commonality in vehicle construction as defined by number of doors and roof treatment (e.g., Sedan, Convertible, Fastback, Hatchback).

"Body type" means a name denoting a group of vehicles that are either in the same car line or in different car lines provided the only reasons the vehicles qualify to be considered in different car lines is that they are produced by separate divisions of a single manufacturer.

"Calibration" means the set of specifications, including tolerances, unique to a particular design, version, or application of a component or components assembly capable of functionally describing its operation over its working range.

"Calibrating gas" means a gas of known concentration which is used to establish the response curve of an analyzer.

"Carline" means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Carline does not consider any level of decor or opulence and is not generally distinguished by characteristics as roof line, number of doors, seats or windows except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different carlines than passenger cars.

"Configuration" means a subclassification of an engine-system combination on the bais of engine code, inertia weight class, transmission type and gear ratios, real axle ration, and other parameters which may be designated by the Administrator.

"Crankcase emissions" means airborne substances emitted to the atmosphere from any portion of the engine crankcase ventilation or lubrication systems.

"Curb-idle" for manual transmission code heavy-duty engines means the manufacturer's recommended engine speed with the transmission in neutral or with the clutch disengaged. For Automatic transmission code heavy-duty engines, curb-idle means the manufacturer's recommended engine speed with the automatic transmission in gear and the output shaft stalled.

"Defeat device" means an AECD that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal urban vehicle operation and use, unless (1) such conditions are substantially included in the Federal emission test procedure, or (2) the need for the AECD is justified in terms of protecting the vehicle against damage or accident, or (3) the AECD does not go beyond the requirements of engine starting.

"Diurnal breathing loss" means fuel evaporative emissions as a result of the daily range in temperature

"Drivetrain configuration" means a unique combination of engine code, transmission configuration and axle ration.

"Dynamometer-idle" for automatic transmission code heavy-duty engines means the manufacturer's recommended engine speed without a transmission that simulates the recommended engine speed with a transmission and with the transmission in neutral.

"Engine code" means a unique combination, within an engine-system combination, of displacement, carburetor (or fuel injection) calibration, choke calibration, distributor calibration, auxiliary emission control devices and other engine and emission control system components specified by the Administrator.

"Engine family" means the basic classification unit of a manufacturer's product line used for the purpose of test fleet selection and determined in accordance with § 86.077–24.

"Engine-system combination" means an engine family-exhaust emission control system combination.

"EPA Enforcement Officer" means any officer or employee of the Environmental Protection Agency so designated in writing by the Administrator (or by his designee).

"Exhaust emissions" means substances emitted to the atmosphere from any opening from the exhaust port of a motor vehicle engine.

"Evaporative emission code" means a unique combination in an evaporative emission family-evaporative emission control system combination, of purge system calibrations, fuel tank and carburetor bowl vent calibrations and other fuel system and evaporative emission control system components and calibrations specified by the Administrator.

"Evaporative emissions" means hydrocarbons emitted into the atmosphere from a motor vehicle, other than exhaust and crankcase emissions.

"Evaporative vehicle configuration" means a unique combination of basic engine, engine code, body type, and evaporative emission code.

"Fuel evaporative emissions" means vaporized fuel emitted into the atmosphere from the fuel system of a motor vehicle.

"Fuel system" means the combination of fuel tank, fuel pump, fuel lines, and carburetor, or fuel injection components, and includes all fuel system vents and fuel evaporative emission control systems.

"Gross vehicle weight" means the value specified by the manufacturer as the loaded weight of a single vehicle.

"Gross vehicle weight rating (GVWR)" means the value specified by the manufacturer as the maximum design loaded weight of a single vehicle.

"Hang-up" refers to the process of hydrocarbon molecules being absorbed, condensed, or by any other method removed from the sample flow prior to reaching the instrument detector. It also refers to any subsequent desorption of the molecules into the sample flow when they are assumed to be absent.

"Heavy-duty engine" means any engine which the engine manufacturer could reasonably expect to be used for motive power in a heavy-duty vehicle.

"Heavy-duty vehicle" means any motor vehicle rated at more than 8,500 pounds GVWR or that has a vehicle curb weight of more than 6,000 pounds or that has a basic vehicle frontal area in excess of 45 square feet.

"High-altitude" means any elevation over 1,219 meters (4,000 feet).

"High-altitude conditions" means a test altitude of 1,585 meters (5,200 feet), plus or minus 274 meters (900 feet), or equivalent observed barometric test conditions of 83.48 kPa (24.72 inches Hg), plus or minus 2.77 kPa (0.82 inches Hg): *Provided,* That the Administrator may approve conditions other than those specified herein on the basis of a written application by the manufacturer.

"High-altitude reference point" means an elevation of 1,620 meters (5,400 feet) plus or minus 100 meters (330 feet), or equivalent observed barometric test conditions of 82 kPa (24.2 inches Hg), plus or minus 1 kPa (0.30 inches Hg).

"Hot soak losses" means evaporative emissions after termination of engine operation.

"Incomplete truck" means any truck which does not have the primary load carrying device or container attached.

"Inertia weight class" means the class, which is a group of test weights, into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of Part 86.

"Intermediate speed" means peak torque speed if peak torque speed occurs between 60 and 75 percent of rated speed. If the peak torque speed is less than 60 percent of rated speed, intermediate speed means 60 percent of rated speed. If the peak torque speed is greater than 75 percent of rated speed, intermediate speed means 75 percent of rated speed.

"Light-duty truck" means any motor vehicle rated at 8,500 pounds GVWR or less which has a vehicle curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of 45 square feet or less, which is:

(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or

(2) Designed primarily for transportation of persons and has a capacity of more than 12 persons, or

(3) Available with special features enabling off-street or off-highway operation and use.

"Light-duty vehicle" means a passenger car or passenger car derivative capable of seating 12 passengers or less.

"Loaded vehicle weight" means the vehicle curb weight of a light-duty vehicle or light-duty truck plus 300 pounds.

"Malfunction" means not operating according to specifications (e.g., those specifications listed in the application for certification).

"Maximum rated horsepower" means the maximum brake horsepower output of an engine as stated by the manufacturer in his sales and service literature and his application for certification under § 86.077–21.

"Maximum rated torque" means the maximum torque produced by an engine as stated by the manufacturer in his sales and service literature and his application for certification under § 86.077–21.

"Military engine" means any engine manufactured solely for the Department of Defense to meet military specifications.

"Model" means a specific combination of carline, body style, and drivetrain configuration.

"Model type" means a unique combination of carline, basic engine, and transmission class.

"Model year" means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year: *Provided,* That if the manufacturer has no annual production period, the term "model year" shall mean the calendar year.

"Nominal fuel tank capacity" means the volume of the fuel tank(s), specified by the manufacturer to the nearest tenth of a U.S. gallon, which may be filled with fuel from the fuel tank filler inlet.

"Opacity" means the fraction of a beam of light, expressed in percent, which fails to penetrate a plume of smoke.

"Option" means any available equipment or feature not standard equipment on a model.

"Oxides or nitrogen" means the sum of the nitric oxide and nitrogen dioxide contained in a gas sample as if the nitric oxide were in the form of nitrogen dioxide.

"Peak torque speed" means the speed at which an engine develops maximum torque.

"Percent load" means the fraction of the maximum available torque at a specified engine speed.

"Precision" means the standard deviation of replicated measurements.

"Rated speed" means the speed at which the manufacturer specifies the maximum rated horsepower of an engine.

"Running loss" means fuel evaporative emissions resulting from an average trip in an urban area or the simulation of such a trip.

"Scheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed on a periodic basis to prevent part failure or vehicle (if the engine were installed in a vehicle) malfunction.

"Smoke" means the matter in the exhaust emissions which obscures the transmission of light.

"Span gas" means a gas of known concentration which is used routinely to set the output level of an analyzer.

"Standard equipment" means those features or equipment which are marketed on a vehicle over which the purchaser can exercise no choice.

"System" includes any motor vehicle engine modification which controls or causes the reduction of substances emitted from motor vehicles.

"Tank fuel volume" means the volume of fuel in the fuel tank(s), which is determined by taking the manufacturer's nominal fuel tank(s) capacity and multiplying by 0.40, the result being rounded using ASTM E29–67 to the nearest tenth of a U.S. gallon.

"Test weight" means the weight, within an inertia weight class, which is used in the dynamometer testing of a vehicle, and which is based on its loaded vehicle weight in accordance with the provisions of Part 86.

"Throttle" means the mechanical linkage which either directly or indirectly controls the fuel flow to the engine.

"Transmission class" means the basic type of transmission, e.g., manual, automatic, semi-automatic.

"Transmission configuration" means a unique combination, within a transmission class, of the number of the forward gears and, if applicable, overdrive. The Administrator may further subdivide a transmission configuration (based on such criteria as gear ratios, torque convertor multiplication ratio, stall speed and shift calibration, etc.), if he determines that significant fuel economy or exhaust emission differences exist within that transmission configuration.

"Unscheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed to correct a part failure or vehicle (if the engine were installed in a vehicle malfunction.

"Useful life" means:

(1) For light-duty vehicles and light-duty trucks a period of use of 5 years or 50,000 miles, whichever first occurs.

(2) For gasoline-fueled heavy-duty engines a period of use of 5 years or 50,000 miles of vehicle operation or 1,500 hours of engine operation (or an equivalent period of 1,500 hours of dynamometer operation), whichever first occurs.

(3) For diesel heavy-duty engines a period of use of 5 years or 100,000 miles of vehicle operation or 3,000 hours of engine operation (or an equivalent period of 1,000 hours of dynamometer operation), whichever first occurs.

"Van" means a light-duty truck having an integral enclosure, fully enclosing the driver compartment and load-carrying device, and having no body sections protruding more than 30 inches ahead of the leading edge of the windshield.

"Vehicle configuration" means unique combination of basic engine, engine code, inertia weight class, transmission configuration and axle ratio.

"Vehicle curb weight" means the actual or the manufacturer's estimated weight of the vehicle in operational status with all standard equipment, and weight of fuel at nominal tank capacity, and the weight of optional equipment computed in accordance with § 86.082–24; incomplete light-duty trucks shall have vehicle curb weight specified by the manufacturer.

"Zero (0) hours" means the point after normal assembly line operations and adjustments are completed and before one (1) additional operating hour has been accumulated.

"Zero (0) miles" means that point after initial engine starting (not to exeed 10 miles of vehicle operations, or one hour of engine operation) at which normal assembly line operations and adjustments are completed.

3. Section 86.082–8 is added. This section is identical to § 86.081–8 with the addition of high-altitude standards in paragraphs (d) through (h).

§ 86.082–8 Emission standards for 1982 model year light-duty vehicles.

(a)(1) Exhaust emissions from 1982 and later model year light-duty vehicles shall not exceed:

(i) *Hydrocarbons.* 0.41 grams per vehicle mile;

(ii) *Carbon monoxide.* 3.4 grams per vehicle mile;

(iii) *Oxides of nitrogen.* 1.0 gram per vehicle mile, except that oxides of nitrogen emissions from 1982 light-duty vehicles manufactured by American Motors Corporations shall not exceed 2.0 grams per vehicle mile.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures.

(b)(1) Fuel evaporative emissions from 1982 and later model year gasoline-fueled light-duty vehicles shall not exceed:

(i) *Hydrocarbons.* 2.0 grams per test.

(2) The standard set forth in paragraph (b)(1) of this section refers to a composite sample of the fuel evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any 1982 and later model year gasoline-fueled light-duty vehicle.

(d) The standards set forth in paragraphs (a) through (c) of this section shall apply for vehicles sold by dealers for principal use below 1,219 meters (4,000 feet) altitude.

(e)(1) Model year 1982 and 1983 light-duty vehicles sold for principal use at designated high-altitude locations shall be capable of meeting the following exhaust emission standards when tested at the high-altitude reference point.

(i) *Hydrocarbons.* 0.57 grams per vehicle mile;

(ii) *Carbon monoxide.* 7.8 grams per vehicle mile;

(iii) *Oxides of nitrogen.* 1.0 gram per vehicle mile, except that oxides of nitrogen emissions from 1982 light-duty vehicles manufactured by American Motors Corporation shall not exceed 2.0 grams per vehicle mile.

(2) The standards set forth in paragraph (e)(1) of this section refer to the exhaust emitted over a driving schedule as set forth in Subpart B of this part and measured and calculated in accordance with those procedures.

(f)(1) Fuel evaporative emissions from 1982 and 1983 model year gasoline-fueled light-duty vehicles sold for principal use at designated high-altitude areas shall not exceed 2.6 gram per test when tested at the high-altitude reference point.

(2) The standard set forth in paragraph (f)(1) of this section refers to a composite sample of the fuel evaporative emissions collected under the conditions set forth in Subpart B of this part and measured in accordance with those procedures.

(g) No crankcase emissions shall be discharged into the ambient atmosphere from any 1982 and 1983 model year gasoline-fueled light-duty vehicles sold by dealers for principal use at or above 1,219 meters (4,000 feet) altitude.

(h)(1) All light-duty vehicles shall be capable (by initial design, adjustment, or modification) of meeting the applicable emission standards set forth in this section for any altitude of operation. Such adjustments and modifications shall:

(i) Be capable of being effectively performed by commercial repair facilities.

(ii) Not exceed an incremental cost to the ultimate purchaser or any subsequent purchaser of $40 in 1979 dollars, whether incurred as an additional cost of the new high-altitude vehicle, or incurred through modifications performed after initial purchase. The maximum allowable charge for each vehicle shall be calculated by using the Consumer Price Index for all Urban Consumers (CPI–U) published by the Bureau of Labor Statistics, U.S. Department of Labor, as follows:

$$C_i = 40 \frac{(0.3 \times R_i) + (0.7 \times N_i)}{(0.3 \times 231.3) + (0.7 \times 161.2)}$$

Where:

C_i = maximum allowable cost to the consumer for modifying a vehicle that had its emission-data vehicle fleet selected in the [i]th calendar year;

R_i = automobile maintenance and repair consumer price index (CPI-U) for January of the calendar year in which the emission-data vehicles are selected; and

N_i = new car consumer price index (CPI-U) for January of the calendar year in which the emission-data vehicles are selected.

(iii) All adjustments and modifications recommended by the manufacturer to be performed on vehicles to satisfy this requirement must be approved in advance by EPA in accordance with § 86.078–22.

(2) Waivers exempting vehicles from the high-altitude compliance requirement may be granted by the Administrator for vehicles designed for high fuel economy through the application of low-power engines. Such waivers will be granted based on a petition by the manufacturer that:

(i) Such vehicles were designed specifically for low altitude application and would not be offered for sale at high altitudes even in the absence of the requirements of this section (due to unacceptable performance (i.e., safety problems) when operated at high altitude);

(ii) The performance (acceleration) of such vehicle would be worse when tested at 1,650 meters (5,400 feet) elevation, than the vehicle with the minimum performance offered by the manufacturer when tested at low altitude.

(iii) The manufacturer must state to EPA that the vehicle has insufficient power to operate safely at high altitudes and provide such warning to the ultimate purchaser via a label on the vehicle and in the owner's manual.

4. Section 86.082–9 is added. This section is identical to § 86.081–9 with the addition of high-altitude standards in paragraphs (d) through (h).

§ 86.082–9 Emission standards for 1982 model year light-duty trucks.

(a)(1) Exhaust emissions from 1982 and later model year light-duty trucks shall not exceed:

(i) *Hydrocarbons.* 1.7 grams per vehicle mile;

(ii) *Carbon monoxide.* 18 grams per vehicle mile;

(iii) *Oxides of nitorgen.* 2.3 grams per vehicle mile.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures.

(b)(1) Evaporative emissions from 1982 and later model year gasoline-fueled light-duty trucks shall not exceed:

(i) *Hydrocarbons.* 2.0 grams per test.

(2) The standard set forth in paragraph (b)(1) of this section refers to a composite sample of the evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any 1982 and later model year gasoline-fueled light-duty truck.

(d) The standards set forth in paragraphs (a) through (c) of this section shall apply for trucks sold by dealers for principal use below 1,219 meters (4,000 feet) altitude.

(e)(1) Model year from 1982 light-duty trucks sold for principal use at designated high-altitude locations shall be capable of meeting the following exhaust emission standards when tested at the high-altitude reference point.

(i) *Hydrocarbons.* 2.0 grams per vehicle mile;

(ii) *Carbon monoxide.* 28.0 grams per vehicle mile;

(iii) *Oxides of nitrogen.* 2.3 grams per vehicle mile.

(2) Exhaust emissions from 1983 model year light-duty trucks sold for principal use at designated high-altitude locations shall be capable of meeting the following standards when tested at the high-altitude reference point.

(i) *Hydrocarbons.* 1.0 grams per vehicle mile;

(ii) *Carbon monoxide.* 14 grams per vehicle mile;

(iii) *Oxides of nitrogen.* 2.3 grams per vehicle mile.

(3) The standards set forth in paragraph (e)(1) and (2) of this section refer to the exhaust emitted over a driving schedule as set forth in Subpart B of this part and measured and calculated in accordance with those procedures.

(f)(1) Fuel evaporative emissions from 1982 and 1983 model year gasoline-fueled light-duty trucks sold for principal use at designated high-altitude areas shall not exceed 2.6 grams per test when tested at the high-altitude reference point.

(2) The standard set forth in paragraph (f)(1) of this section refers to a composite sample of the fuel evaporative emissions collected under the conditions set forth in Subpart B of this part and measured in accordance with those procedures.

(g) No crankcase emissions shall be discharged into the ambient atmosphere from any 1982 and 1983 model year gasoline-fueled light-duty trucks sold by dealers for principal use at or above, 1,219 meters (4,000 feet) altitude.

(h) All light-duty trucks shall be capable (by initial design, adjustment, or modification) of meeting the applicable emission standards set forth in this section for any altitude of operation. Such adjustments and modifications shall:

(i) Be capable of being effectively performed by commercial repair facilities;

(ii) Not exceed an incremental cost to the ultimate purchaser or any subsequent purchaser of $40 in 1979 dollars, whether incurred as an additional cost of the new high-altitude vehicle, or incurred through modifications performed after initial purchase. The maximum allowable charge for each vehicle shall be calculated by using the Consumer Price Index for all Urban Consumers (CPI–U) published by the Bureau of Labor Statistics, U.S. Department of Labor, as follows.

$$C_i = 40\,\frac{(0.3\times R_i)+(0.7\times N_i)}{(0.3\times 231.3)+(0.7\times 161.2)}$$

Where:

C_i = maximum allowable cost to the consumer for modifying a vehicle that had its emission-data vehicle fleet selected in the [i]th calendar year;

R_i = automobile maintenance and repair consumer price index (CPI–U) for January of the calendar year in which the emission-data vehicles are selected; and

N_i = new car consumer index (CPI–U) for January of the calendar year in which the emission-data vehicles are selected.

(iii) All adjustments and modifications recommended by the manufacturer to be performed on vehicles to satisfy this requirement must be approved in advance by EPA in accordance with § 86.078–22.

5. Section 86.082–21 is added. This section is identical to § 86.079–21 except for paragraphs (a), (b)(2), (5)(i), and (5)(ii).

§ 86.082–21 Application for certification.

(a) A separate application for a certification of conformity shall be made for each set of standards (except for high-altitude standards) and each class of new motor vehicle engines. Such application shall be made to the Administrator by the manufacturer and shall be updated and corrected by amendment.

(b) The application shall be in writing, signed by an authorized representative of the manufacturer, and shall include the following:

(1)(i) *All vehicles and engines.* Identification and description of the vehicles (or engines) covered by the application and a description of their engine (vehicles only), emission control system and fuel system components. This shall include a detailed description of each auxiliary emission control device (AECD) to be installed in or on any certification test vehicle (or certification test engine).

(ii) *Light-duty vehicles and light-duty trucks only.* (A) The manufacturer shall

provide to the Administrator in the preliminary application for certification:

(*1*) A list of those parameters which are physically capable of being adjusted (including those adjustable parameters for which access is difficult) and that, if adjusted to settings other than the manufacturer's recommended setting, may affect emissions;

(*2*) A specification of the manufacturer's intended physically adjustable range of each such parameter, and the production tolerances of the limits or stops used to establish the physically adjustable range;

(*3*) A description of the limits or stops used to establish the manufacturer's intended physically adjustable range of each adjustable parameter, or any other means used to inhibit an adjustment;

(*4*) The nominal or recommended setting, and the associated production tolerances, for each such parameter.

(B) the manufacturer may provide, in the preliminary application for certification, information relating to why certain parameters are not expected to be adjusted in actual use and to why the physical limits or stops used to establish the physically adjustable range of each parameter, or any other means used to inhibit adjustment, are expected to be effective in preventing adjustment of parameters on in-use vehicles to settings outside the manufacturer's intended physically adjustable ranges. This may include results of any tests to determine the difficulty of gaining access to an adjustment or exceeding a limit as intended or recommended by the manufacturer.

(C) The Administrator may require to be provided detailed drawings and descriptions of the various emission related components, and/or hardware samples of such components, for the purpose of making his determination of which vehicle or engine parameters will be subject to adjustment for new certification and Selective Enforcement Audit testing and of the physically adjustable range for each such vehicle or engine parameter.

(2) Projected U.S. sales data sufficient to enable the Administrator to select a test fleet representative of the vehicles (or engines) for which certification is requested, including the altitude of intended sale for light-duty vehicles and light-duty trucks.

(3) A description of the test equipment and fuel proposed to be used.

(4)(i) A description of the proposed mileage (or service) accumulation procedure for durability testing.

(ii) A description of the test procedures to be used to establish the evaporative emission deterioration factors required to be determined and supplied in § 86.079–23(a)(2).

(5)(i) A statement of recommended maintenance and procedures necessary to assure that the vehicles (or engines) covered by a certificate of conformity in operation conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(ii) A description of vehicle adjustments or modifications necessary, if any, to assure that light-duty vehicles and light-duty trucks covered by a certificate of conformity, conform to the regulations while being operated at any altitude.

(6) At the option of the manufacturer, the proposed composition of the emission-data and durability-data test fleet.

(c) Complete copies of the application and of any amendments thereto, and all notifications under §§ 86.079–32, 86.079–33, and 86.079–34 shall be submitted in such multiple copies as the Administrator may require.

(d) Incomplete light-duty trucks shall have a maximum completed curb weight and maximum completed frontal area specified by the manufacturer.

6. Section 86.082–24 is added. This section is identical to § 86.079–24 except for paragraphs (b)(1)(v) and (b)(1)(vii)(D).

§ 86.082–24 Test vehicles and engines.

(a)(1) The vehicles or engines covered by an application for certification will be divided into groupings of engines which are expected to have similar emission characteristics throughout their useful life. Each group of engines with similar emission characteristics shall be defined as a separate engine family.

(2) To be classed in the same engine family, engines must be identical in all the following respects:

(i) The cylinder bore center-to-center dimensions.

(ii) The dimension from the centerline of the crankshaft to the centerline of the camshaft.

(iii) The dimension from the centerline of the crankshaft to the top of the cylinder block head face.

(iv) The cylinder block configuration (air cooled or water cooled; L–6, 90° V–8, etc.).

(v) The location of intake and exhaust valves (or ports) and the valve (or port) sizes (within a ⅛-inch range on the valve head diameter or within 10 percent on the port area).

(vi) The method of air aspiration.

(vii) The combustion cycle.

(viii) Catalytic converter characteristics.

(ix) Thermal reactor characteristics.

(x) Type of air inlet cooler (e.g., intercoolers and after-coolers) for diesel-duty engines.

(3) Engines identical in all the respects listed in paragraph (a)(2) of this section may be further divided into different engine families if the Administrator determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the following features of each engine:

(i) The bore and stroke.

(ii) The surface-to-volume ratio of the nominally dimensioned cylinder at the top dead center position.

(iii) The intake manifold induction port size and configuration.

(iv) The exhaust manifold port size and configuration.

(v) The intake and exhaust valve sizes.

(vi) The fuel system.

(vii) The camshaft timing and ignition or injection timing characteristics.

(4) Where engines are of a type which cannot be divided into engine families based upon the criteria listed in paragraphs (a) (2) and (3) of this section, the Administrator will establish families for those engines based upon the features most related to their emission characteristics.

(5) The gasoline-fueled vehicles covered by an application for certification will be divided into groupings which are expected to have similar evaporative emission characteristics throughout their useful life. Each group of vehicles with similar evaporative emission characteristics shall be defined as a separate evaporative emission family.

(6) To be classed in the same evaporative emission family, vehicles must be similar with respect to:

(i) Type of vapor storage device (e.g., canister, air cleaner, crankcase).

(ii) Basic canister design.

(iii) Fuel system.

(7) Where vehicles are of a type which cannot be divided into evaporative emission families based on the criteria listed above, the Administrator will establish families for those vehicles based upon the features most related to their evaportative emission characteristics.

(b) Emission data. (1) *Emission-data vehicles.* Paragraph (b)(1) of this section applies to light-duty vehicle and light-duty truck emission-data vehicles.

(i) Vehicles will be chosen to be operated and tested for emission data based upon the engine family groupings. Within each engine family, the requirements fo this paragraph must be met.

(ii) Vehicles within an engine family will be divided into engine displacement-exhaust emission control system combinations as applicable. A projected sales volume will be established for each combination for the model year for which certification is sought. One vehicle of each combination will be selected in order of decreasing projected sales volume until 70 percent of the projected sales of a manufacturer's sales of a manufacturer's total production of vehicles of that engine family is represented, or until a maximum of four vehicles is selected. If any single combination represents over 70 percent, then two vehicles of that combination may be selected. The vehicle selected for each combination will be specified by the Administrator as to such features as engine code, transmission type, fuel system, inertia weight class, and test weight.

(iii) The Administrator may select a maximum of four additional vehicles within each engine family based upon features indicating that they may have the highest emission levels of the vehicles in that engine family. In selecting these vehicles, the Administrator will consider such features as the emission control system combinations, induction system characteristics, ignition system characteristics, fuel system, rated horsepower, rated torque, compression ratio, inertia weight class, test weight, transmission options, and axle ratio.

(iv) If the vehicles selected in accordance with paragraphs (b)(1) (ii) and (iii) of this section do not represent each engine-system combination, then one vehicle of each engine-system combination not represented will be selected by the Administrator. The vehicle selected shall be of the engine displacement with the largest projected sales volume of vehicles with the control system combination in the engine family and will be designated by the Administrator as to such features as engine code, transmission type, fuel system, inertia weight class, and test weight.

(v) The Administrator may select one vehicle for each engine-system combination within an engine family if such a vehicle is expected to have high exhaust emissions when operated at high altitude.

(vi) The Administrator may combine testing requirements for any vehicle selected under paragraph (b)(1)(v) or (b)(1)(vii)(D) of this section with the testing requirements for any similar vehicle in the same engine-system combination selected under paragraph (b)(1) (ii), (iii), or (iv) of this section or any similar vehicle in the same engine-system, evaporative emission family evaporative emission control system combination selected under paragraph (b)(1)(vii) (A) or (B) of this section. The testing requirements may be combined by the Administrator by requiring a vehicle selected for testing under paragraphs (b)(1) (ii), (iii), (iv), (vii)(A), or (vii)(B) of this section to be modified (if necessary) after mileage accumulation and emission testing for the purpose of demonstrating compliance with § 86.079–23(c)(1)((ii).

(vii)(A) Vehicles of each evaporative emission family will be divided into evaporative emission control systems. One vehicle of each evaporate emission control system within the evaporative emission family will be selected.

(B) The Administrator may select a maximum of four additional vehicles within each evaporative emission family based upon features indicating that they may have the highest evaporative emission levels of vehicles in that family.

(C) The Administrator may determine that the vehicles selected under paragraphs (b)(1) (ii) through (iv) of this section may be used to satisfy the requirements of paragraphs (b)(1)((vii) (A) and (B) of this section.

(D) The Administrator may select one vehicle for each evaporative emission control system within each evaporative emission family if such a vehicle is expected to have high evaporative emissions when operated at high altitude.

(E) Vehicles selected under (b)(1)(v) may be used to satisfy the requirements of (b)(1)(vii)(D).

(2) *Gasoline-fueled heavy-duty emission-data engines.* Paragraph (b)(2) of this section applies to gasoline-fueled heavy-duty engines.

(i) Engines will be chosen to be run for emission data based upon engine family groupings. Within each engine family, the requirements of this paragraph must be met.

(ii) Engines of each engine family will be divided into engine displacement-exhaust emission control system combinations. A projected sales volume will be established for each combination for the applicable model year. One engine of each combination will be selected in order of decreasing projected sales volume until 70 percent of the projected sales of a manufacturer's total production of engines of that family is represented, or until a maximum of four engines is selected. The engines selected for each combination will be specified by the Administrator as to fuel system.

(iii) The Administrator may select a maximum of two additional engines within each engine family based upon features indicating that they may have the highest emission levels of the engines in that engine family. In selecting these engines, the Administrator will consider such features as the exhaust emission control system, induction system characteristics, ignition system characteristics, fuel system, rated horsepower, rated torque, and compression ratio.

(iv) If the engines selected in accordance with paragraphs (b)(2) (ii) and (iii) of this section do not represent each engine displacement-exhaust emission control system combination, then one engine of each engine displacement-exhaust emission control system combination not represented shall be selected by the Administrator.

(3) *Diesel heavy-duty emission-data engines.* Paragraph (b)(3) of this section applies to Diesel heavy-duty emission-data engines.

(i) Engines will be chosen to be run for emission data based upon engine family groupings. Within each engine family, the requirements of this paragraph must be met.

(ii) Engines of each engine family will be divided into groups based upon exhaust emission control system. One engine of each engine-system combination shall be run for smoke emission data and gaseous emission data as prescribed in § 86.082–28(c)(3). Either the complete gaseous emission test or the complete smoke test may be conducted first. Within each combination, the engine that features the highest fuel feed per stroke, primarily at the speed of maximum rated torque and secondarily at rated speed, will usually be selected. If there are military engines with higher fuel rates than other engines in the same engine-system combination, then one military engine shall also be selected. The engine with the highest fuel feed per stroke will usually be selected.

(iii) The Administrator may select a maximum of one additional engine within one engine-system combination based upon features indicating that it may have the highest emission levels of the engines of that combination. In selecting this engine, the Administrator will consider such features as the injection system, fuel system, compression ratio, rated speed, rated horsepower, peak torque speed, and peak torque.

(c) Durability data. (1) *Durability-data vehicles.* Paragraph (c)(1) of this section applies to light-duty vehicle and light-duty truck durability-data vehicles.

(i) A durability-data vehicle will be selected by the Administrator to represent each engine-system

combination. The vehicle selected shall be of the engine displacement with the largest projected sales volume of vehicles with that control system combination in that engine family and will be designated by the Administrator as to transmission type, fuel system, inertia weight class, and test weight.

(ii) A manufacturer may elect to operate and test addditional vehicles to represent any engine-system combination. The additional vehicles must be of the same engine displacement, transmission type, fuel system, inertia weight class, and test weight as the vehicle selected for that engine-system combination in accordance with the provisions of paragraph (c)(1)(i) of this section. Notice of an intent to operate and test additional vehicles shall be given to the Administrator no later than 30 days following notification of the test fleet selection.

(2) *Gasoline-fueled heavy-duty durability-data engines.* Paragraph (c)(2) of this section applies to gasoline-fueled heavy-duty durability-data engines.

(i) A durability-data engine will be selected by the Administrator to represent each engine-system combination.

(ii) [Reserved]

(iii) A manufacturer may elect to operate and test additional engines to represent any engine-system combination. The additional engines must be of the same engine displacement and fuel system as the engine selected for that combination in accordance with the provisions of paragraph (c)(2)(i) of this section. Notice of an intent to run additional engines shall be given to the Administrator not later than 30 days following notification of the test fleet selection. Deterioration factors calculated for each engine-system combination shall be applied separately to military and non-military engines within the same engine-system combination.

(3) *Diesel heavy-duty durability-data engines.* Paragraph (c)(3) of this section applies to Diesel heavy-duty durability-data engines.

(i) One engine from each engine-system combination shall be tested as prescribed in § 86.082–26(c)(3)(ii). At each test point, either the complete gaseous emission test or the complete smoke test may be conducted first. Within each combination, the engine which features the highest fuel feed per stroke, primarily at rated speed and secondarily at the speed of maximum rated torque, will usually be selected for durability testing. In the case where more than one engine in an engine-system combination has the highest fuel feed per stroke, the engine with the highest maximum rated horsepower will usually be selected for durability testing. If an engine system combination includes both military and nonmilitary engines, then the nonmilitary engine with the highest maximum rated horsepower will usually be selected for durability testing.

(ii) A manufacturer may elect to operate and test additional engines to represent any engine-system combination. The additional engines must be of the same model and fuel system as the engine selected in accordance with the provisions of paragraph (c)(3)(i) of this section. Notice of an intent to test additional engines shall be given to the Administrator not later than 30 days following notification of the test fleet selection. Deterioration factors calculated for each engine-system combination shall be applied separately to military and nonmilitary engines within the same engine-system combination.

(d) For purposes of testing under § 86.082–26 (a)(9), (b)(9) or (c)(11), the Administrator may require additional emission-data vehicles (or emission-data engines) and durability-data vehicles (or durability-data engines) identical in all material respects to vehicles (or engines) selected in accordance with paragraphs (b) and (c) of this section: *Provided*, That the number of vehicles (or engines) selected shall not increase the size of either the emission-data fleet or the durability-data fleet by more than 20 percent or one vehicle (or engine), whichever, is greater.

(e) Any manufacturer whose projected sales for the model year in which certification is sought is less than

(1) 2,000 gasoline-fueled light-duty vehicles, or

(2) 2,000 diesel light-duty vehicles, or

(3) 2,000 gasoline-fueled light-duty trucks, or

(4) 2,000 diesel light-duty trucks, or

(5) 2,000 gasoline-fueled heavy-duty engines, or

(6) 2,000 diesel heavy-duty engines, may request a reduction in the number of test vehicles (or engines) determined in accordance with the foregoing provisions of this section. The Administrator may agree to such lesser number as he determines would meet the objectives of this procedure.

(f) In lieu of testing an emission-data or durability-data vehicle (or engine) selected under paragraph (b) or (c) of this section, and submitting data therefor, a manufacturer may, with the prior written approval of the Administrator, submit exhaust emission data and/or fuel evaporative emission data, as applicable on a similar vehicle (or engine) for which certification has previously been obtained or for which all applicable data required under § 86.079–23 has previously been submitted.

(g) (1) This paragraph applies to light-duty vehicles and light-duty trucks.

(2) Where it is expected that more than 33 percent of a car line, within an engine-system combination, may be equipped with an item (whether that item is standard equipment or an option), the full estimated weight of that item shall be included in the curb weight computation of each vehicle available with that item in that carline, within that engine-system combination. Where it is expected that 33 percent or less of the carline, within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option) no weight for that item will be added in computing the curb weight for any vehicle in that carline, within that engine system combination, unless that item is standard equipment on the vehicle. In the case of mutually exclusive options, only the weight of the heavier option will be added in computing the curb weight. Optional items weighing less than three pounds per item need not be considered.

(3) Where it is expected that more than 33 percent of a carline, within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option) that can reasonably be expected to influence emissions, then such items shall actually be installed, unless specifically excluded by the Administrator, on all emission data and durability data vehicles of that carline, within that engine-system combination, on which the items are intended to be offered in production. Items that can reasonably be expected to influence emissions are: air conditioning, power steering, power brakes, and other items determined by the Administrator.

(4) Where it is expected that 33 percent or less of a carline within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option) that can reasonably be expected to influence emissions, that item shall not be installed on any emission data vehicle or durability data vehicle of that carline, within that engine-system combination, unless that item is standard equipment on that vehicle or specifically required by the Administrator.

7. Section 86.082–26 is added. This section is identical to § 86.080–26 except for paragraphs (a)(3)(i)(C), (a)(3) (i)(D),

(a)(3)(ii)(C), (a)(3)(ii)(D), and (a)(3)(iii)(A).

§ 86.082–26 Mileage and service accumulation; emission measurements.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(2) The procedure for mileage accumulation will be the durability driving schedule as specified in appendix IV to this part. A modified procedure may also be used if approved in advance by the Administrator. Except with the advance approval of the Administrator, all vehicles will accumulate mileage at a measured curb weight which is within 100 pounds of the estimated curb weight. If the loaded vehicle weight is within 100 pounds of being included in the next higher inertia weight class as specified in § 86.129, the manufacturer may elect to conduct the respective emission tests at the test weight corresponding to the higher loaded vehicle weight.

(3) *Emission-data-vehicles.* Unless as otherwise provided for in § 86.079–23(a), emission-data vehicles shall be operated and tested as follows:

(i) *Gasoline-fueled.* (A) Each gasoline-fueled emission-data vehicle shall be driven 4,000 miles with all emission control systems installed and operating. Complete exhaust emission tests shall be conducted at zero and 4,000 miles on those vehicles selected under § 86.082–24 (b)(1)(ii) through (b)(1)(v). Complete exhaust and evaporative emission tests shall be conducted at zero miles and 4,000 miles on those vehicles selected under § 86.082–24(b)(1)(vii). The manufacturer may at his option test the vehicles selected under § 86.082–24(b)(1)(vii) up to three times at the 4,000-mile test point as long as the ±250-mile test tolerance is adhered to. The Administrator may determine under § 86.082–24(f) that no testing is required.

(B) The emission-data vehicle(s) selected for testing under § 86.082–24 (b)(1)(v) or (b)(1)(vii)(D) shall be driven 6,436 kilometers (4,000 miles) at any altitude. Emission tests shall be conducted at zero kilometers (zero miles) at any altitude and 6,436 kilometers (4,000 miles) under high-altitude conditions.

(C) Exhaust and evaporative emission tests at 6,436 kilometers (4,000 miles) for vehicles selected under § 86.082–24(b)(1)(ii) through (b)(1)(iv) shall be conducted under low-altitude conditions.

(D) The Administrator may designate any vehicles selected under § 86.082–24 (b)(1)(ii) through (b)(1)(vii) to be tested under high-altitude conditions. If the manufacturer recommends adjustments or modifications in order to conform to emission standards at high altitude, such adjustments or modifications shall be made to the test vehicle (in accordance with the instructions to be provided to the ultimate purchaser) before being tested at high altitude.

(ii) *Diesel.* (A) Each diesel emission-data vehicle shall be driven 6,436 kilometers (4,000 miles) with all emission control systems installed and operating. Emission tests shall be conducted at zero kilometers (zero miles) and 6,436 kilometers (4,000 miles).

(B) The emission-data vehicle(s) selected for testing under § 86.082–24(b)(1)(v) shall be driven 6,436 kilometers (4,000 miles) at any altitude. Emission tests shall be conducted at zero kilometers (zero miles) at any altitude and 6,436 kilometers (4,000 miles) under high-altitude conditions.

(C) Exhaust emission tests at 6,436 kilometers (4,000 miles) shall be conducted under low-altitude conditions.

(D) The Administrator may designate any vehicles selected under § 86.082–24 (b)(1)(ii) through (b)(1)(vii) to be tested under high-altitude conditions. If the manufacturer recommends adjustments or modifications in order to conform to emission standards at high altitude, such adjustments or modifications shall be made to the test vehicle (in accordance with the instructions to be provided to the ultimate purchaser) before being tested at high altitude.

(iii)(A) Vehicles tested for compliance under high-altitude conditions shall be tested at an elevation of 1,620 meters±100 meters (5,400 feet±300 feet) or the equivalent observed barometric test conditions of 82±1 kilopascal.

(4) *Durability-date vehicles.* Unless as otherwise provided for in § 86.079–23(a), durability-data vehicles shall be operated and tested as follows:

(i) *Gasoline-fueled.* Each gasoline-fueled durability-data vehicle selected by the Administrator or elected by the manufacturer under § 86.082–24(c)(1) shall be driven, with all emission control systems installed and operating for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objective of this procedure. Complete exhaust emission tests shall be made on all durability-data vehicles selected by the Administrator or elected by the manufacturer under § 86.082–24(c) at the following mileage points: 0; 5,000; 10,000; 15,000; 20,000; 25,000; 30,000; 35,000; 40,000; 45,000; 50,000. The Administrator may determine under § 86.082–24(f) that no testing is required.

(ii) *Diesel.* Each diesel durability-data vehicle shall be driven, with all emission control systems installed and operating, for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objectives of the procedure. Complete emission tests (see §§ 86.106 through 86.145) shall be made at the following mileage points: 0; 5,000; 10,000; 15,000; 20,000; 25,000; 30;000; 35,000; 40,000; 45,000; 50,000.

(5) All tests required by this subpart to be conducted after every 5,000 miles of driving for durability-data vehicles and 4,000 miles for emission-data vehicles must be conducted at any accumulated mileage within 250 miles of each of those test points.

(6)(i) The results of each emission test shall be supplied to the Administrator immediately after the test. The manufacturer shall furnish to the Administrator explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. If a manufacturer conducts multiple test at any test point at which the data are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed three valid tests. Tests between tests points may be conducted as required by the Administrator. Data from all tests (including voided tests) shall be air posted to the Administrator within 24 hours (or delievered within 3 working days). In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.079–23. Where the Administrator conducts a test on a durability-data vehicle at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(ii) The results of all emission tests shall be rounded, using the "rounding off method" specified in ASTM E29–67, to the number of places to the right of the decimal point indicated by expressing applicable emission standards of this subpart of three significant figures.

(7) Whenever the manufacturer proposes to operate and test a vehicle which may be used for emission or durability data, he shall provide the zero-mile test data to the Administrator (except for those vehicles for which the zero-mile test requirement has been waived under § 86.079–23(a)(2)) and make the vehicle available for such testing under § 86.079–29 as the Administrator may require before beginning to accumulate mileage on the vehicle. Failure to comply with this requirement will invalidate all test data submitted for this vehicle.

(8) Once a manufacturer begins to operate an emission-data or durability-data vehicle, as indicated by compliance

with paragraph (a)(7) of this section, he shall continue to run the vehicle to 4,000 miles or 50,000 miles, respectively, and the data from the vehicle will be used in the calculations under § 86.082–28. Discontinuation of a vehicle shall be allowed only with the written consent of the Administrator.

(9)(i) The Administrator may elect to operate and test any test vehicle during all or any part of the mileage accumulation and testing procedure. In such cases, the manufacturer shall provide the vehicle(s) to the Administrator with all information necessary to conduct this testing.

(iii) The test procedures in §§ 86.106 through 86.145 will be followed by the Administrator. The Administrator will test the vehicles at each test point. Maintenance may be performed by the manufacturer under such conditions as the Administrator may prescribe.

(iii) The data developed by the Administrator for the engine-system combination shall be combined with any applicable data supplied by the manufacturer on other vehicles of that combination to determine the applicable deterioration factors for the combination. In the case of a significant discrepancy between data developed by the Administrator and that submitted by the manufacturer, the Administrator's data shall be used in the determination of deterioration factors.

(10) Emission testing of any type with respect to any certification vehicle other than that specified in this part is not allowed except as such testing may be specifically authorized by the Administrator.

(11) This section does not apply to testing conducted to meet the requirements of § 86.079–23(b)(2).

(b)(1) Paragraph (b) of this section applies to heavy-duty engines.

(2)(i) For gasoline-fueled engines, the dynamometer service accumulation schedule will consist of several operating conditions which give the percent loads and the modes as specified in the following chart. The percentage of time in each mode must be held within the limits specified. The maximum observed torque for each mode in the service accumulation cycle must be determined at the rpm at which the mode is being conducted. The percent load for that mode will be determined from the maximum torque at the rpm at which the mode is being conducted.

Mode	Observed torque (percentage of maximum observed)	Percentage of time
Idle	Idle	23 (22–24)
CT	CT	14 (13–15)
PTO	10	6 (5–7)
Cruise	25	31 (30–32)
PTA	55	15 (14–16)
FL	90	11 (10–12)

(ii) The equivalent control parameter for engine loading will be manifold vacuum, manifold pressure, or torque. Usage of one of the three parameters will require approval in advance by the Administrator. The control parameter values that correspond to the appropriate percent loads as specified in the emission test cycle will be initially determined at the zero-hour point or after an appropriate break-in procedure. The control parameter values determined initially will be used for the entire service accumulation schedule. If at any time during the service accumulation, the 90 percent torque value cannot be attained, the engine shall be operated at wide-open throttle.

(iii) The average speed shall be between 1,650 and 1,700 rpm. Subject to the requirements as to average speed, there must be operation at speeds in excess of 3,200 rpm (but not in excess of governed speed for governed engines or rated speed for nongoverned engines) for a cumulative maximum of 0.5 percent of the actual cycle time, excluding time in transient conditions. Maximum cycle time shall be 15 minutes. A cycle approved in advance by the Administrator shall be used.

(3)(i) For diesel engines, the following criteria must be met before service accumulation can begin. Failure to comply with these requirements shall invalidate all test data submitted for an engine.

(A) Each engine shall produce at least 95 percent of the maximum horsepower, corrected to rating conditions, at 95 to 100 percent of the rated speed.

(B) The fuel rate at maximum horsepower shall be within manufacturer's specifications.

(ii) During service accumulation, hours can be credited toward the required service accumulation hours when the following criteria are met. If these criteria cannot be met, engine operation shall be discontinued and the Administrator shall be notified immediately. (Adjustments to the fuel rate can be approved under the provisions of § 86.079–25).

(A) Each engine shall produce at least 95 percent of the maximum horsepower, at 95 to 100 percent of the rated speed, observed at the zero-hour point. Horsepower values shall be corrected to the rating conditions.

(B) The engine shall be operated at 75 percent of the inlet and exhaust restrictions specified in § 86.879–3 except that the tolerance will be ±3 inches of water and ±0.5 inch of Hg respectively.

(C) During each emission test the inlet and exhaust restrictions shall be as specified in § 86.879–8.

(4) If a break-in procedure is used, the procedure must be the same as recommended to the ultimate purchaser. Prior approval by the Administrator is required for use of any break-in procedure. The hours accumulated during the break-in procedure will not be counted as part of the service accumulation.

(5) Emission-data engines: Each emission-data engine shall be operated for 125 hours with all emission control systems installed and operating. An emission test shall be conducted at 125 hours. A zero-hour emission may be performed after the engine has been approved by the Administrator to begin service accumulation. Evaporative emission controls need not be connected provided normal operating conditions are maintained in the engine induction system.

(6) Durability-data engines: Each gasoline-fueled durability-data engine shall be operated, with all emission control systems installed and operating, for 1,500 hours. Each diesel durability-data engine shall be operated for 1,000 hours. Emission measurement, as prescribed, shall be made at 125-hour intervals beginning at 125 hours of operation. A zero-hour emission test may be performed after the engine has been approved by the Administrator to begin service accumulation. Evaporative emission controls need not be connected provided normal operating conditions are maintained in the engine induction system.

(7) All tests required by this subpart to be conducted after 125 hours of operation or at any multiple of 125 hours may be conducted at any accumulated number of hours within 8 hours of 125 hours or the appropriate multiple of 125 hours respectively.

(8)(i) Data from all emission tests (including voided tests) shall be air posted to the Administrator within 72 hours (or delivered within 5 working days). The manufacturer shall furnish to the Administrator an explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. If a manufacturer conducts multiple tests at any test point at which the data

are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed 3 valid tests. Tests between test points may be conducted as required by the Administrator. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.079–23. Where the Administrator conducts a test on a durability-data engine at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed 3 valid tests. Tests between test points may be conducted as required by the Administrator. In addition, all test data shall be compiled and provided to the Administrator in accordance with § 86.079–23. Where the Administrator conducts a test on a durability-data engine at a prescribed test point, the results of that test will be used in the calculation of the deterioration factor.

(ii) The results of all emission tests shall be recorded and reported to the Administrator using two places to the right of the decimal point. These numbers shall be rounded in accordance with the "Rounding Off Method" specified in ASTM E 29–67.

(9) Whenever the manufacturer proposes to operate and test an engine which may be used for emission or durability data, he shall provide such information concerning components used on the engine as the Administrator may require and make the engine available for such testing under § 86.079–29 as the Administrator may require, before beginning to accumulate hours on the engine. Failure to comply with this requirement will invalidate all test data later submitted of this engine.

(10) Once a manufacturer begins to operate an emission-data or durability-data engine, as indicated by compliance with paragraph (b)(9) of this section, he shall continue to run any emission-data engine to 125 hours, any gasoline-fueled durability-data engine to 1,500 hours, and any diesel durability-data engine to 1,000 hours. The data from the engine will be used in the calculations under § 86.345. Discontinuation of an engine shall be allowed only with the prior written consent of the Administrator.

(11)(i) The Administrator may elect to operate and test any test engine during all or any part of the service accumulation and testing procedure. In such cases the manufacturer shall provide the engine(s) to the Administrator with all information necessary to conduct the testing.

(ii) The test procedures (Subparts D or H of this part for gasoline-fueled engines, and subparts I and D or I and J of this part of diesel engines) will be followed by the Administrator. The Administrator will test the engines at each test point. Maintenance may be performed by the manufacturer under such conditions as the Administrator may prescribe.

(iii) The data developed by the Administrator for the engine-system combination shall be combined with any applicable data supplied by the manufacturer on other engines of that combination to determine the applicable deterioration factors for the combination. In the case of a significant discrepance between data developed by the Administrator and that submitted by the manufacturer, the Administrator's data shall be used in the determination of deterioration factors.

(12) Emission testing of any type with respect to any certification engine other than that specified in this subpart is not allowed except as such testing may be specifically authorized by the Administrator.

8. Section 86.082–28 is added. This section is identical to § 86.079–28 except for paragraph (a)(4)(i)(B).

§ 86.082–28 Compliance with emission standards.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(2) The applicable exhaust and fuel evaporative emission standards of this subpart apply to the emissions of vehicles for their useful life.

(3) Since it is expected that emission control efficiency will change with mileage accumulation on the vehicle, the emission level of a vehicle which has accumulated 50,000 miles will be used as the basis for determining compliance with the standards.

(4) The procedure for determining compliance of a new motor vehicle with exhaust emission standards is as follows:

(i) Separate emission deterioration factors shall be determined from the exhaust emission results of the durability-data vehicles(s) for each engine-system combination. A separate factor shall be established for exhaust HC, exhaust CO, and exhaust NO_x for each engine-system combination. A separate evaporative emission deterioration factor shall be determined for each evaporative emission family-evaporative emission control system combination from the testing conducted by the manufacturer.

(A) The applicable results to be used in determining the exhaust emission deterioration factors for each engine-system combination shall be:

(*1*) All valid exhaust emission data from the tests required under § 86.082–26(a)(4) except the zero-mile tests. These shall include the official test results, as determined in § 86.079–29 for all tests conducted on all durability-data vehicles of the combination selected under § 86.082–24(c) (including all vehicles elected to be operated by the manufacturer under § 86.082–24(c)(1)(ii)).

(*2*) All exhaust emission data from the tests conducted before and after the scheduled maintenance provided in § 86.079–25

(*3*) All exhaust emission data from tests required by maintenance approved under § 86.079–25, in those cases where the Administrator conditioned his approval for the performance of such maintenance on the inclusion of such data in the deterioration factor calculation.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The interpolated 4,000- and 50,000-mile points on this line must be within the low-altitude standards provided in § 86.082–8 or § 86.082–9 as applicable, or the data will not be acceptable for use in calculation of a deterioration factor, unless no applicable data point exceeded the standard. An exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor=Exhaust emissions interpolated to 50,000 divided by exhaust emissions interpolated to 4,000 miles.

These interpolate values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTME 29–67.

(C) An evaporative emission deterioration factor shall be determined from the testing conducted as described in § 86.082–21(b)(4)(ii), for each evaporative emission family-evaporative emission control system combination to indicate the evaporative emission level at 50,000 miles relative to the evaporative emission level at 4,000 miles as follows:

Factor=Evaporative emission level at 50,000 miles minus the evaporative emission level at 4,000 miles.

The factor shall be established to a minimum of two places to the right of the decimal.

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the 4,000 mile test point shall be multiplied by the appropriate deterioration factor: *Provided,* That if a deterioration factor as computed in paragraph (a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results for each evaporative emission-data vehicle at the 4,000 mile test point shall be adjusted by addition of the appropriate deterioration factor: *Provided,* That if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

(iii) The emissions to compare with the standard shall be the adjusted emissions of paragraph (a)(4)(ii) (A) and (B) of this section for each emission-data vehicle. Before any emission value is compared with the standard, it shall be rounded, in accordance with ASTM E 29–67, to two significant figures. The rounded emission values may not exceed the standard.

(iv) Every test vehicle of an engine family must comply with the exhaust emission standards, as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(v) Every test vehicle of an evaporative emission family must comply with the evaporative emission standards, as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(b)(1) Paragraph (b) of this section applies to heavy-duty engines.

(2) The exhaust emission standards for gasoline-fueled engines in § 86.080–11 or for Diesel engines in § 86.080–11 apply to the emissions of engines for their useful life.

(3) Since emission control efficiency decreases with the accumulation of hours on the engine, the emission level of a gasoline-fueled engine which has accumulated 1,500 hours of dynamometer operation or a diesel engine which has accumulated 1,000 hours of dynamometer operation will be used as the basis for determining compliance with the standards.

(4) The procedure for determining compliance of a new engine with exhaust emission standards is as follows:

(i) Separate emission deterioration factors shall be determined from the emission results of the durability-data engine for each engine-system combination. Separate factors shall be established for HC, CO, and for the combined emissions of HC and NO_x. For Diesel engines, separate factors shall also be established for the acceleration mode (designated as "A"), the lugging mode (designated as "B"), and the peak opacity (designated as "C").

(A) The applicable results to be used in determining the deterioration factors for each combination shall be:

(*1*) All valid emission data from the tests required under § 86.079–26(b). These shall include the official test results, as determined in § 86.079–29, for all tests conducted on all gasoline-fueled durability-data engines of the combination selected under § 86.082–24(c)(2) or on all Diesel durability-data engines of the combination selected under § 86.082–24(c)(3) (including all engines elected to be operated by the manufacturer under § 86.082–24(c)(2)(iii) for gasoline-fueled engines or under § 86.082–24(c)(3)(ii) for Diesel engines).

(*2*) All emission data from the tests conducted before and after maintenance provided in § 86.079–25(c)(2)(i)(A) for gasoline-fueled engines or in § 86.079–25(c)(2)(i)(B) for Diesel engines.

(*3*) All emission data from the tests conducted before and after maintenance provided in § 86.079–25(c)(2)(v)(C) for Diesel engines if emission tests were conducted.

(B) All applicable emission results for (1) HC, (2) CO, (3) HC+NO_x, (4) acceleration smoke ("A"), (5) lugging smoke ("B"), and (6) peak smoke ("C") shall be plotted as a function of durability hours which shall be consistently rounded to the nearest hour. Emission data shall have two figures to the right of the decimal. The best fit straight lines, fitted by the method of least squares, shall be drawn through these data points. The interpolated 125-hour and 1,500-hour points for gasoline-fueled engines or the 1,000-hour point for Diesel engines on each line, rounded to whole numbers in accordance with ASTM E 29–67, must be within the standards specified in § 86.080–10 for gasoline-fueled engines or in § 86.080–11 for Diesel engines or the data shall not be used in the calculation of a deterioration factor, unless no applicable data points exceed the standards.

(C) The interpolated values shall be used to calculate a deterioration factor as follows:

Factor = Exhaust emissions interpolated to 1,500 hours for gasoline-fueled engines or to 1,000 hours for Diesel engines minus the exhaust emissions interpolated to 125 hours. (Negative deterioration factors shall be considered zero).

(ii) The appropriate deterioration factor, carried out to two places to the right of the decimal point, shall be added to the exhaust emission test results, carried out to two places to the right of the decimal point, for each emission-data engine.

(iii) The emission values to compare with the standards shall be the adjusted emission values of paragraph (b)(4)(ii) of this section rounded to two significant figures in accordance with ASTM E 29–67 for each emission-data engine.

(iv) Every test engine of engine family must comply with all applicable standards, as determined in paragraph (b)(4)(iii) of this section, before any engine in that family will be certified.

9. Section 86.082–30 is added. This section is identical to § 86.079–30 except for paragraphs (a)(3), (a)(4), (a)(5), (a)(6), (b)(1)(i)(B), and (b)(1)(i)(C).

§ 86.082–30 Certification.

(a)(1) If, after a review of the test reports and data submitted by the manufacturer, data derived from any inspection carried out under § 86.078–7(c), and any other pertinent data or information, the Administrator determines that a test vehicle(s) (or test engine(s)) meet(s) the requirements of the Act and of this subpart, he will issue a certificate of conformity with respect to such vehicle(s) (or engine(s)) except in cases covered by paragraph (c) of this section.

(i) Each certificate of conformity shall state the altitude(s) at which the vehicle(s) covered by the certificate has demonstrated compliance with the applicable emission standards.

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary to assure that any new motor vehicle (or new motor vehicle engine) covered by the certificate will meet the requirements of the Act and of this part. Each such certificate shall contain the following language:

This certificate covers only those new motor vehicles (or new motor vehicle engines) which conform, in all material respects, to the design specifications that applied to those vehicles (or engines) described in the application for certification and which are produced during the —— model year production period of the aid manufacturer, as defined in 40 CFR 86.082–2.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 86.078–7 (c) which concern either the vehicle (or engine) certified, or any production vehicle (or production engine) which when completed will be claimed to be covered by this certificate. Failure to

comply with all the requirements of § 86.078–7(c) with respect to any such vehicle (or engine) may lead to revocation or suspension of this certificate as specified in 40 CFR § 86.082–30(c). It is also a term of this certificate that this certificate may be revoked or suspended for the other reasons stated in § 86.082–30 (c) or (d).

(3) One such certificate will be issued for each engine family. For gasoline-fueled light-duty vehicles and light-duty trucks, one such certificate will be issued for each engine family-evaporative emission family combination. Each certificate will certify compliance with no more than one set of standards except for low-altitude standards and high-altitude standards. The certificate shall state that it covers vehicles sold or delivered to an ultimate purchaser for principal use at high altitude only if the vehicle conforms, in all material respect to the design in the application for certification at high altitude.

(4) The adjustment or modification of any light-duty vehicle or light-duty truck in accordance with instructions provided by the manufacturer as approved by EPA for the altitude of the dealership selling or leasing the vehicle will not be considered violation of section 203(a)(3) of the Clean Air Act. A violation of section 203(a)(1) of the Clean Air Act occurs when any manufacturer sells or delivers to an ultimate purchaser any light-duty vehicle or light-duty truck, subject to the regulations under the Act which is not configured to meet high-altitude standards:

(i) At a designated high altitude location, unless such manufacturer has substantial reason to believe that such motor vehicle will not be sold to an ultimate purchaser for principal use at a designated high-altitude location; or

(ii) At an other than designated high-altitude location, when such manufacturer has reason to believe that such motor vehicle is intended by the ultimate purchaser to be used principally at a designated high-altitude location.

(5) For the purpose of paragraph (a) of this section, "designated high-altitude location" is any county which has substantially all of its area located above 1,219 meters (4,00 feet) and which is identified below:

Counties Located Substantially Above 1,219 Meters (4,000 Feet) in Elevation

State of Arizona

Apache	Navajo

State of Colorado

Adams	Alamosa
Arapahoe	Lake
Archuleta	La Plata
Boulder	Larimer
Chaffee	Las Animas
Clear Creek	Lincoln
Conejos	Mesa
Costilla	Mineral
Crowley	Moffat
Custer	Montezuma
Delta	Montrose
Denver	Morgan
Dolores	Ouray
Douglas	Park
Eagle	Pitkin
Elbert	Pueblo
El Paso	Rio Blanco
Fremont	Rio Grande
Garfield	Routt
Gilpin	Saguache
Grand	San Juan
Gunnison	San Miguel
Hinsdale	Summit
Huerfano	Teller
Jackson	Washington
Jefferson	Weld

State of Idaho

Bannock	Custer
Bear Lake	Franklin
Bingham	Fremont
Blaine	Jefferson
Bonneville	Madison
Butte	Minidoka
Camas	Oneida
Caribou	Power
Cassia	Teton
Clark	Valley

State of Montana

Beaverhead	Madison
Deer Lodge	Meagher
Gallatin	Park
Jefferson	Silver Bow

State of Nebraska

Banner	Sioux
Kimball	

State of Nevada

Carson City	Lander
Douglas	Lyon
Elko	Mineral
Esmeralda	Storey
Eureka	White Pine
Humboldt	

State of New Mexico

Bernalillo	Mora
Catron	Rio Arriba
Colfax	Sandoval
Curry	San Juan
De Baca	San Miguel
Grant	Santa Fe
Guadalupe	Sierra
Harding	Socorro
Lincoln	Taos
Los Alamos	Torrance
Luna	Union
McKinley	Valencia

State of Oregon

Lake

State of Utah

Beaver	Juab
Box Elder	Kane
Cache	Millard
Carbon	Morgan
Daggett	Piute
Davis	Rich
Duchesne	Salt Lake
Emery	San Juan
Grand	Sanpete
Iron	Sevier
Summit	Wasatch
Tooele	Wayne
Uintah	Weber
Utah	

State of Wyoming

Albany	Natrona
Carbon	Niobrara
Converse	Park
Fremont	Platte
Goshen	Sublette
Hot Springs	Sweetwater
Johnson	Teton
Laramie	Uinta
Lincoln	Weston

(6) The provisions of paragraph (a)(4) of this section shall not apply to any light-duty vehicle or light-duty truck sold, offered for sale, introduced,or delivered for intorduction into commerce in California provided that the vehicle is covered by a certificate of conformity with emission standards in effect in California.

(7) Certificates issued for light-duty vehicles or light-duty trucks certified with catalytic converters shall be subject to the following term in addition to the term in paragraph (a)(2) of this section: "Catalyst-equipped vehicles, otherwise covered by this certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of the catalysts. If these vehicles are imported or offered for the importation without retrofit of the catalyst, they will be considered not to be within the coverage of this certificate unless included in a catalyst control program operated by a manufacturer or a United States Government Agency and approved by the Administrator."

(8) Certificates issued for incomplete light-duty trucks shall be subject to the following term in addition to the term in paragraph (a)(2) of this section: "For incomplete light-duty trucks, this certificate covers only those new motor vehicles which when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in 40 CFR 86.082–21(d)."

(9) Certificates issued for heavy-duty engines shall be subject to the following term in addition to the term in paragraph (a)(2) of this section: "For heavy-duty engines, this certificate covers only those new motor vehicle engines installed in heavy-duty vehicles which conform to the minimum gross vehicle weight rating, curb weight, or frontal area limitations for heavy-duty vehicles described in 40 CFR 86.082–2."

(b)(1) The Administrator will determine whether a vehicle (or engine) covered by the application complies

with applicable standards by observing the following relationships:

(i) *Light-duty vehicles and light-duty trucks.* (A) The durability-data vehicle(s) selected under § 86.082–24(c)(1)(i) shall represent all vehicles of the same engine-system combination.

(B) The emission-data vehicle(s) selected under § 86.082–24(b)(1)(ii) through (b)(1)(v) shall represent all vehicles of the same engine-system combination as applicable.

(C) The emission-data vehicle(s) selected under§ 86.078–24(b)(1)(vii)(A) and (b)(1)(vii)(B) shall represent all vehicles evaporative emission family, as applicable.

(D) [Deleted]

(E) [Deleted]

(ii) *Gasoline-fueled heavy-duty engines.* (A) A test engine selected under § 86.082–24(b)(2)(ii) and (iv) shall represent all engines in the same engine family of the same engine displacement-exhaust emission control system combination.

(B) A test engine selected under § 86.082–24(b)(2)(iii) shall represent all engines in the same engine family of the same engine displacement-exhaust emission control system combination.

(C) A test engine selected under § 86.082–24(c)(2)(i) shall represent all engines of the same engine-system combination.

(iii) *Diesel heavy-duty engines* (A) A test engine selected under § 86.082–24(b)(3)(ii) shall represent all engines of the same engine-system combination.

(B) A test engine selected under § 86.082–24(b)(3)(iii) shall represent all engines of that emission control system at the rated fuel delivery of the test engines.

(C) A test engine selected under § 86.082–24(c)(3)(i) shall represent all engines of the same engine-system combination.

(2) The Administrator will proceed as in paragraph (a) of this section with respect to the vehicles (or engines) belonging to an engine family or engine family-evaporative emission family combination (as applicable), all of which comply with all applicable standards.

(3) If, after a review of the test reports and data submitted by the manufacturer, data derived from any additional testing conducted pursuant to § 86.079–29, data or information derived from any inspection carried out under § 86.078–7(c) or any other pertinent data or information, the Administrator determines that one or more test vehicles (or test engines) of the certification test fleet do not meet applicable standards, he will notify the manufacturer in writing, setting forth the basis for his determination. Within 30 days following receipt of the notification, the manufacturer may request a hearing of the Administrator's determination. The request shall be in writing, signed by an authorized representative of the manufacturer and shall include a statement specifying the manufacturer's objections to the Administrator's determination and data in support of such objections. If, after a review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 86.078–6 with respect to such issue.

(4) For light-duty vehicles and light-duty trucks the manufacturer may, at his option, proceed with any of the following alternatives with respect to an emission-data vehicle determined not in compliance with all applicable standards for which it was tested:

(i) Request a hearing under § 86.078–6; or

(ii) Remove the vehicle configuration (or evaporative vehicle configuration, as applicable) which failed, from his application;

(A) If the failed vehicle was tested for compliance with exhaust emission standards only: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle to be tested for exhaust emission compliance only.

(B) If the failed vehicle was tested for compliance with both exhaust and evaporative emission standards: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle which will be tested for compliance with both exhaust and evaporative emission standards. If one vehicle cannot be selected in accordance with the selection criteria employed in selecting the failed vehicle, then two vehicles may be selected (i.e., one vehicle to satisfy the exhaust emission vehicle selection criteria and one vehicle to satisfy the evaporative emission vehicle selection criteria). The vehicle selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards only. The vehicle selected to satisfy the evaporative emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards; or

(iii) Remove the vehicle configuration (or evaporative vehicle configuration, as applicable) which failed from the application and add a vehicle configuration(s) (or evaporative vehicle configuration(s), as applicable) not previously listed. The Administrator may require, if applicable, that the failed vehicle be modified to the new engine code (or evaporative emission code, as applicable) and demonstrate by testing that it meets applicable standards for which it was originally tested. In addition, the Administrator may select, in accordance with the vehicle selection criteria given in § 86.082–24(b), a new emission-data vehicle or vehicles. The vehicles selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards only. The vehicles selected to satisfy the evaporative emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards; or

(iv) Correct a component or system malfunction and show that with a correctly functioning system or component the failed vehicle meets applicable standards for which it was originally tested. The Administrator may require a new emission-data vehicle, of identical vehicle configuration (or evaporative vehicle configuration, as applicable) to the failed vehicle, to be operated and tested for compliance with the applicable standards for which the failed vehicle was originally tested.

(5) For heavy-duty engines the manufacturer may, at his option, proceed with any of the following alternatives with respect to any engine family represented by a test engine(s) determined not in compliance with applicable standards:

(i) Request a hearing under § 86.078–6; or

(ii) Delete from the application for certification the engines represented by the failing test engine. (Engines so deleted may be included in a later request for certification under § 86.079–32.) The Administrator will then select in place of each failing engine an alternate engine chosen in accordance with selection criteria employed in selecting the engine that failed; or

(iii) Modify the test engine and demonstrate by testing that it meets applicable standards. Another engine which is in all material respects the same as the first engine, as modified, shall then be operated and tested in accordance with applicable test procedures.

(6) If the manufacturer does not request a hearing or present the required data under paragraphs (b)(4) or (b)(5) (as applicable) of this section, the Administrator will deny certification.

(c)(1) Not withstanding the fact that any certification vehicle(s) (or certification engine(s)) may comply with

other provisions of this subpart, the Administrator may withhold or deny the issuance of a certificate of conformity (or suspend or revoke any such certificate which has been issued) with respect to any such vehicle(s) (or engine(s)) if:

(i) The manufacturer submits false or incomplete information in his application for certification thereof;

(ii) The manufacturer renders inaccurate any test data which he submits pertaining thereto or otherwise circumvents the intent of the Act, or of this part with respect to such vehicle (or engine);

(iii) Any EPA Enforcement Officer is denied access on the terms specified in § 86.078–7(c) to any facility or portion thereof which contains any of the following:

(A) The vehicle (or engine);

(B) Any components used or considered for use in its modification or buildup into a certification vehicle (or certification engine);

(C) Any production vehicle (or production engine) which is or will be claimed by the manufacturer to be covered by the certificate;

(D) Any step in the construction of a vehicle (or engine) described in (C) of this subdivision;

(E) Any records, documents, reports, or histories required by this part to be kept concerning any of the above;

(iv) Any EPA Enforcement Officer is denied "reasonable assistance" (as defined in § 86.078–7(c)) in examining any of the items listed in paragraph (c)(1)(iii) of this section.

(2) The sanctions of withholding, denying, revoking, or suspending of a certificate may be imposed for the reasons in paragraphs (c)(1)(i), (ii), (iii), or (iv) of this section only when the infraction is substantial.

(3) In any case in which a manufacturer knowingly submits false or inaccurate information or knowingly renders inaccurate or invalid any test data or commits any other fraudulent acts and such acts contribute substantially to the Administrator's decision to issue a certificate of conformity, the Administrator may deem such certificate void ad initio.

(4) In any case in which certification of a vehicle (or engine) is proposed to be withheld, denied, revoked, or suspended under paragraph (c)(1)(iii) or (c)(1)(iv) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.078–7(c) in fact occurred, the manufacturer, if he wishes to contend that, even though the violation occurred, the vehicle (or engine) in question was not involved in the violation to a degree that would warrant withholding denial, revocation, or suspension of certification under either paragraph (c)(1)(iii) or (c)(1)(iv) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(5) Any revocation or suspension of certification under paragraph (c)(1) of this section shall:

(i) be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.078–6 hereof.

(ii) Extend no further than to forbid the introduction into commerce of vehicles (or engines) previously covered by the certification which are still in the hands of the manufacturer, except in cases of such fraud or other misconduct as makes the certification invalid ab initio.

(6) The manufacturer may request in the form and manner specified in paragraph (b)(3) of this section that any determination made by the Administrator under paragraph (c)(1) of this section to withhold or deny certification be reviewed in a hearing conducted in accordance with § 86.078–6. If the Administrator finds, after a review of the request and supporting data, that the request raises a substantial factual issue, he will grant the request with the respect to such issue.

(d)(1) Notwithstanding the fact that any vehicle configuration or engine family may be covered by a valid outstanding certificate of conformity, the Administrator may suspend such outstanding certificate of conformity in whole or in part with respect to such vehicle configuration or engine family if:

(i) The manufacturer refuses to comply with the provisions of a test order issued by the Administrator pursuant to § 86.603; or

(ii) The manufacturer refuses to comply with any of the requirements of § 86.603; or

(iii) The manufacturer submits false or incomplete information in any report or information provided pursuant to the requirements of § 86.609; or

(iv) The manufacturer renders inaccurate any test data which he submits pursuant to § 86.609; or

(vi) Any EPA Enforcement Officer is denied the opportunity on the terms specified in § 86.606, to:

(A) Monitor vehicle selection pursuant to § 86.607, or

(B) Select vehicles for testing pursuant to § 86.607, or

(C) Monitor vehicle testing performed to satisfy any of the requirements of this part; or

(vii) Any EPA Enforcement Officer is denied "reasonable assistance" as defined in § 86.606 in examining any of the items listed in that section; or

(viii) The manufacturer refuses to comply with the requirements of §§ 86.604(a), 86.605, and 86,607, 86.608, 86.610, or 86.611.

(2) The sanction of suspending a certificate may not be imposed for the reasons in paragraphs (d)(1)(i), (ii), or (viii) of this section where such refusal is caused by conditions and circumstances outside the control of the manufacturer which renders it impossible to comply with those requirements. Such conditions and circumstances shall include, but not be limited to, any uncontrollable factors which results in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown or failure or illness of personnel, but shall not include failure of the manufacturer to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(3) The sanctions of suspending a certificate may be imposed for the reasons in paragraphs (d)(1)(iii), (iv), (v), (vi), or (vii) of this section only when the infraction is substantial.

(4) In any case in which a manufacturer knowingly submitted false or inaccurate information or knowingly rendered inaccurate any test data or committed any other fraudulent acts, and such acts contributed substantially to the Administrator's original decision not to suspend or revoke a certificate of conformity in whole or in part, the Administrator may deem such certificate void from the date of such fraudulent act.

(5) In any case in which certification of a vehicle is proposed to be suspended under paragraph (d)(1)(v), (d)(1)(vi), or (d)(1)(vii) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.606 in fact occurred, the manufacturer, if he wishes to contend that even though the violation occurred, the vehicle configuration or engine family in question was not involved in the violation to the degree that would warrant suspension of certification under either paragraph (d)(1)(v), (d)(1)(vi), or (d)(1)(vii) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(6) Any suspension of certification under paragraph (d)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.613 hereof, and

(ii) Not apply to vehicles no longer in the hands of the manufacturer.

10. Section 86.082–35 is added. This section is identical to § 86.079–35 except for paragraphs (a)(1)(iii)(D) and (a)(1)(iii)(F), (a)(1)(iii)(G).

§ 86.082–35 Labeling.

(a) The manufacturer of any motor vehicle (or motor vehicle engine) subject to the applicable emission standards of this subpart, shall, at the time of manufacture, affix a permanent legible label, or the type and in the manner described below, containing the information hereinafter provided, to all production models of such vehicles (or engines) available for sale to the public and covered by a certificate of conformity under § 86.082–30(a).

(1) *Light-duty vehicles and light-duty trucks.* (i) A permanent, legible label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Vehicle Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches), engine, family identification and evaporative family identification;

(D) Engine tune-up specifications and adjustments, as recommended by the manufacturer in accordance with the altitude at which the vehicle is to be sold for principle use to the ultimate purchaser, including but not limited to idle speed(s), ignition timing, the idle air-fuel mixture setting procedure and value (e.g., idle CO, idle air-fuel ratio, idle speed drop), high idle speed, initial injection timing, and valve lash (as applicable), as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tune-up and what accessories (e.g., air conditioner), if any, should be in operation. If adjustments or modifications to the vehicle are necessary to insure compliance with emission standards at either high or low altitude, the manufacturer shall either include the instructions for such adjustments on the label, or indicate on the label where instructions for such adjustments may be found. The label shall indicate whether the engine tune-up or adjustment specifications are applicable to elevation below or above 4,000 feet.

(E) An unconditional statement of compliance with the appropriate model year U.S. Environmental Protection Agency regulations which apply to light-duty vehicles or light-duty trucks;

(F) A statement, if applicable, that the adjustments or modifications indicated on the label are necessary to assure emission control compliance at the altitude specified.

(G) For high-altitude vehicles, a statement indicating that the vehicle was sold to the ultimate purchaser for principal use at high altitude.

(2) *Heavy-duty engines.* (i) A permanent legible label shall be affixed to the engine in a position in which it will be readily visible after installation in the vehicle.

(ii) The label shall be attached to an engine part necessary for normal engine operation and not normally requiring replacement during engine life.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals which shall be a color that contrasts with the background of the label:

(A) The label heading: Engine Exhaust Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches) and engine family and model designations;

(D) Date of engine manufacture (month and year);

(E) Engine specifications and adjustments as recommended by the manufacturer. These specifications should indicate the proper transmission position during tuneup and what accessories (e.g., air conditioner), if any, should be in operation;

(F) For gasoline-fueled engines the label should include the idle speed, ignition timing, and the idle air-fuel mixture setting procedure and value (e.g., idle CO, idle air-fuel ratio, idle speed drop), and valve lash.

(G) For Diesel engines the label should include the advertised hp at rpm, fuel rate at advertised hp in mm^3 stroke, valve lash, initial injection timing, and idle speed.

(H) An unconditional statement of compliance with appropriate model year (e.g., 1979) U.S. Environmental Protection Agency regulations applicable to heavy-duty engines.

(iv) The label may be made up of one or more pieces; *Provided,* That all pieces are permanently attached to the same engine or vehicle part as applicable.

(b) The provisions of this section shall not prevent a manufacturer from also reciting on the label that such vehicle (or engine) conforms to any applicable State emission standards for new motor vehicles (or new motor vehicle engines) or any other information that such manufacturer deems necessary for, or useful to, the proper operation and satisfactory maintenance of the vehicle (or engine).

(c)(1) The manufacturer of any light-duty vehicle or light-duty truck subject to the emission standards of this subpart, shall, in addition and subsequent to setting forth those statements on the label required by the Department of Transportation (DOT) pursuant to 49 CFR 567.4, set forth, on the DOT label or on an additional label located in proximity to the DOT label and affixed as described in 49 CFR 567.4(b), the following information in the English language, lettered in block letters and numerals not less than three thirty-seconds of an inch high, of a color that contrasts with the background of the label:

(i) The heading: "Vehicle Emission Control Information";

(ii) The statement: "This Vehicle Conforms to U.S. EPA Regulations Applicable to 1979 Model year New Motor Vehicles."

(iii) One of the following statements, as applicable, in letters and numerals not less than six thirty-seconds of an inch high and of a color that contrasts with the background of the label:

(A) For all vehicles certified as non-catalyst-equipped: "NON-CATALYST";

(B) For all vehicles certified as catalyst-equipped which are included in a manufacturer's catalyst control program for which approval has been given by the Administrator: "CATALYST-APPROVED FOR IMPORT";

(C) For all vehicles certified as catalyst-equipped which are not included in a manufacturer's catalyst control program for which prior approval has been given by the Administrator: "CATALYST."

(2) In lieu of selecting either of the labeling options of paragraph (c)(1) of this section, the manufacturer may add the information required by paragraph

(c)(1)(iii) of this section to the label required by paragraph (a) of this section. The required information will be set forth in the manner prescribed by paragraph (c)(1)(iii) of this section.

(d) Incomplete light-duty trucks or incomplete heavy-duty vehicles optionally certified as light-duty trucks shall have the following statement printed on the label required in paragraph (a)(1) of this section in lieu of the statement required by paragraph (a)(1)(iii)(E) of this section: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model year New Motor Vehicles when completed at a maximum curb weight of ———— pounds and a maximum frontal area of ——— square feet."

(e) Incomplete heavy-duty vehicles having an 8,500 pound gross vehicle weight rating or less shall have the following statement printed on the label required in paragraph (a)(2) or (a)(3) of this section in lieu of the statement required by paragraph (a)(2)(iii)(F) or (a)(3)(iii)(F) of this section: "This engine conforms to U.S. EPA regulations applicable to 19— Model Year New heavy-Duty Engines when installed in a vehicle completed at a curb weight of more than 6,000 pounds or with a frontal area greater than 45 square feet."

(f) The manufacturer of any incomplete vehicle shall notify the purchaser of such vehicle of any curb weight, frontal area, or gross vehicle weight rating limitations affecting the emissions certificate applicable to that vehicle. This notification shall be transmitted in a manner consistent with National Highway Traffic Safety Administration safety notification requirements published in 49 CFR Part 568.

11. Section 86.082–38 is added. This section is identical to § 86.079–38 except for paragraphs (c)(2) and (d)(2).

§ 86.082–38 Maintenance instructions

(a) The manufacturer shall furnish or cause to be furnished to the purchaser of each new motor vehicle (or motor vehicle engine) subject to the standards prescribed in §§ 86. 082–8, 86.082–9, 86.080–10, or 86.080–11, as applicable, written instructions for the maintenance and use of the vehicle (or engine) by the purchaser as may be reasonable and necessry to assure the proper functioning of emission control systems.

(1) Such instructions shall be provided for those vehicle and engine components listed in Appendix VI to this part (and for any other components) to the extent that maintenance of these components is necessary to assure the proper functioning of emission control systems.

(2) Such instructions shall be in clear, and to the extent practicable, nontechnical language.

(b) The maintenance instructions required by this section shall contain a general description of the documentation which the manufacturer will require from the ultimate purchaser or any subsequent purchaser as evidence of compliance with the instructions.

(c) *For gasoline-fueled light duty vehicles and light-duty trucks.* (1) Such instructions shall specify the performance of all scheduled maintenance performed by the manufacturer under § 86.079–25(a) and shall explain the conditions under which EGR system and catalytic converter maintenance are to be performed (e.g., what type of warning device is being employed and whether the device is activated by component failure or the need for periodic maintenance).

(2) Such instructions shall indicate what adjustments or modifications, if any, are necessary to allow the vehicle to meet applicable emission standards at elevations above or below 4,000 feet.

(3) [Reserved]

(d) *For Diesel light-duty vehicles and light-duty trucks.* (1) Such instructions shall specify the performance of all scheduled maintenance performed by the manufacturer under § 86.079–25(a) and shall explain the conditions under which EGR system and catalytic converter maintenance are to be performed (e.g., what type of warning device is being employed and whether the device is activated by component failure or the need for periodic maintenance).

(2) Such instructions shall indicate what adjustments or modifications, if any, are necessary to allow the vehicle to meet applicable emission standards at elevations above or below 4,000 feet.

(e) For gasoline-fueled heavy-duty engines, such instructions shall specify the performance of all scheduled maintenance performed by the manufacturer under § 86.079–25 (c)(2). Scheduled maintenance in addition to that performed on the durability-data engine under § 86.079–25(c)(2) may be recommended for reasons such as to offset the effects of operating conditions which differ from the dynamometer durability cycle or to increase the life of the engine beyong 1,500 hours (or the equivalent). The instructions may schedule maintenance on a calendar time basis and/or mileage basis in addition to the engine service time basis that was followed by the manufacturer under § 86.079–25(c)(2).

(f) For Diesel heavy-duty engines, such instructions shall specify the performance of all scheduled maintenance performed by the manufacturer under § 86.079–25(c)(2). Scheduled maintenance in addition to that performed on the durability-data engine under § 86.079–25(c)(2) may be recommended for reasons such as to offset the effects of operating conditions which differ from the dyamometer durability cycle or to increase the life of the engine beyond 1,000 hours (or the equivalent). The instructions may schedule maintenance on a calendar time basis, mileage basis, engine service time basis, or combination of each.

(Secs. 202, 206, and 301(a) of the Clean Air Act as amended (42 U.S.C. 7521, 7525, and 7601 (a)).

Dated: January 15, 1980.

Douglas M. Costle,

Administrator, U.S. EPA.

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